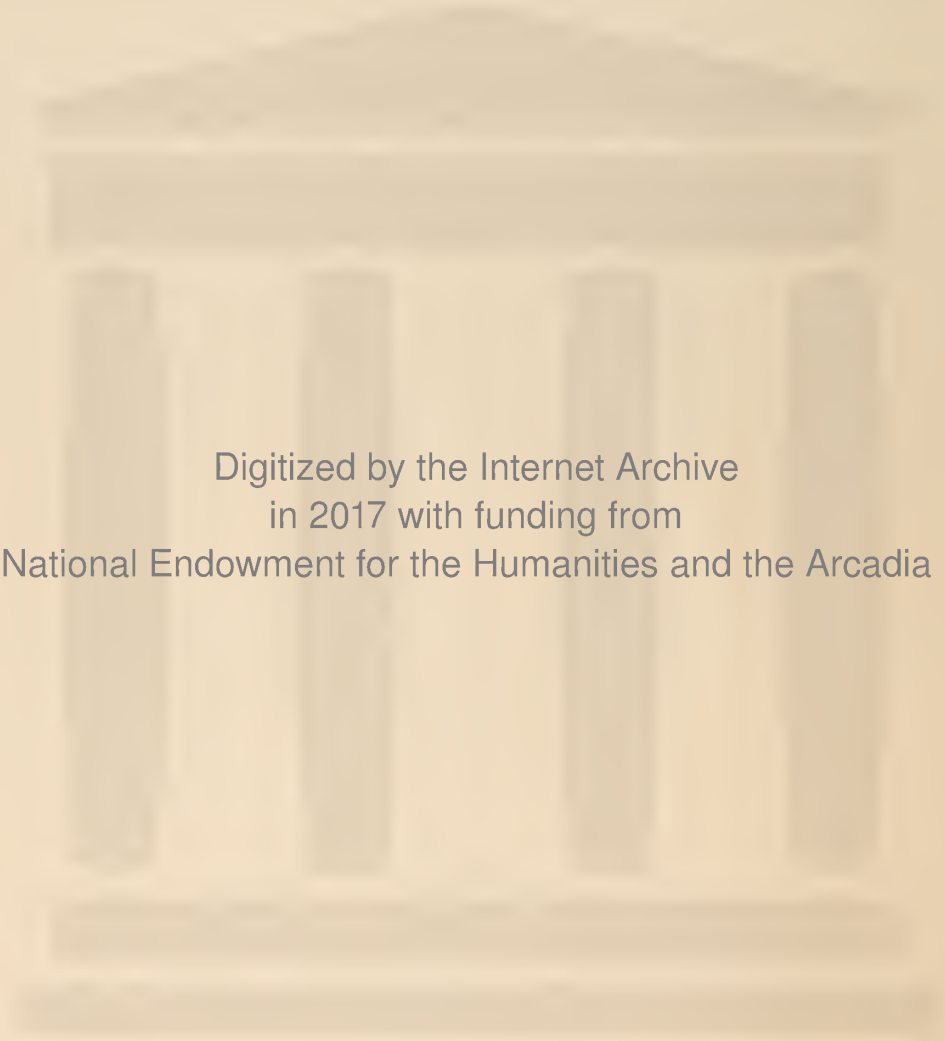


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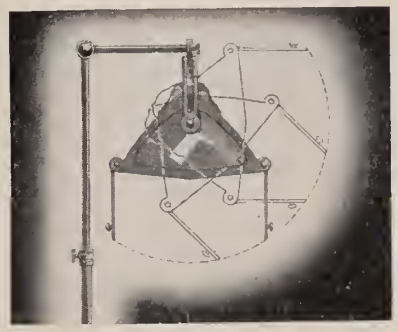
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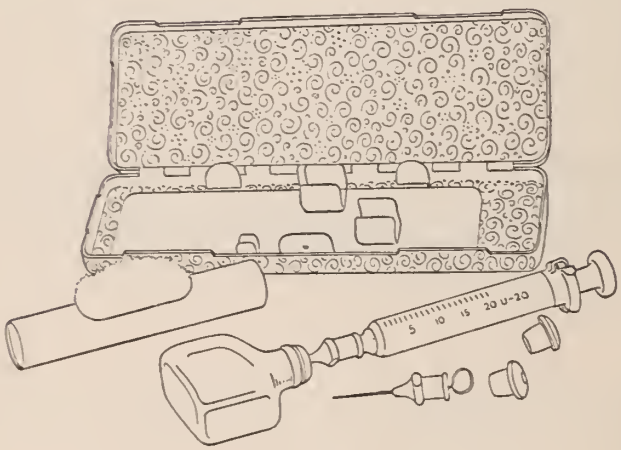
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RICHMOND, VA., APRIL, 1934

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THE DIAGNOSIS AND TREATMENT OF RHEUMATIC HEART DISEASE IN CHILDREN.*

JAMES ALEXANDER LYON, M. D., F. A. C. P.,
Washington, D. C.

Rheumatic infection is unquestionably the most frequent cause of heart disease in childhood. Lewis,[1] of London, is of the opinion that, if congenital malformations be excluded, rheumatism is the only important cause of chronic carditis in early life. In New England, for instance, in a series of 448 cases of heart disease occurring in patients under twenty years of age, 415 (93 per cent) were rheumatic in type, twenty-eight (6 per cent) were of congenital origin, and only five (1 per cent) originated in other conditions.[2] This relative incidence varies in different regions, the southern latitudes showing a smaller percentage. Material gathered by Coburn[3] and his associates indicates that rheumatic heart disease is prevalent and severe in Pennsylvania and throughout the states to the north, that it is common in Virginia and the other southern states, but that it is rare in Florida and the West Indies and almost unknown in the equatorial countries.

We now conceive of rheumatism as a generalized disease having its origin in an undetermined infectious agent, or in a dietary, metabolic, or glandular disturbance. When this rheumoidal condition is present it may take an insidious course accompanied only by obscure and fleeting symptoms, or there may be a severe manifestation of a so-called typical syndrome. During the period of childhood the heart is especially susceptible to rheumatic infection, whether the disease appears in an acute form or is latent and obscure. When a definite acute attack of rheumatism occurs accompanied by pain it quickly brings the patient to the attention of a physician and early treatment is instituted. It should be recognized, however, that carditis may be accompanied by mild symptoms, such as "growing" or slight joint pains, a stiff neck, or a light attack of tonsillitis. This is of primary importance because it has been observed that a child with rheumatic infection may not show signs of his disease until symptoms of cardiac insufficiency appear. Some of the most severe types of heart disease we have observed in The Children's Hospital were those in which the symptoms had been either latent or so slight that the child was not seen by a physician until he was suffering from cardiac insufficiency. This fact emphasizes the great importance of early recognition of these latent forms of rheumoidal disease.

It is not uncommon in a large cardiac clinic for one to encounter a certain number of children with congenital heart disease. It has been my observation, and I believe it is a generally accepted fact, that all children with congenital heart disease are potential cases of rheumatic carditis and of subacute bacterial endocarditis.

There is a group of cases in which an incipient acute rheumatic fever runs its course without permanently affecting the myocardium or the valve leaflets. In this group, as a rule, the disease is recognized and early treatment is instituted. In these cases a mild attack of myocarditis subsides without leaving permanent damage or functional disturbances. In the Cardiac Clinic of our Out-Patient Department of The Children's Hospital, we often observe from month to month the gradual return of the heart to its normal size and the frequent early disappearance of murmurs.

There is a second group of patients, however, whose heart muscle is more extensively damaged, resulting in permanent changes. As we examine these children from time to time we find a persistent systolic murmur in the mitral area. Even with this murmur well established, symptoms of cardiac disease may

*From the Georgetown University School of Medicine.
Read by invitation before the annual meeting of the Virginia Pediatric Society, Lynchburg, Va., October 25, 1933.

be entirely absent provided there is no accompanying enlargement of the heart. These patients, unfortunately, seldom reach maturity without recurrent rheumatic infections.

In a third group of cases, changes in the myocardium are sufficiently extensive to produce symptoms of permanent cardiac distress. In certain cases showing physical signs of mitral stenosis and aortic regurgitation, the dilatation alone may be the causative agent producing these murmurs. The mere presence of a double murmur in the mitral or aortic area does not denote structural changes in the valve leaflets. Cases number I and IV of the present series very clearly demonstrate that the myocardium may be extensively involved without an accompanying endocarditis.

In the fourth group, which may be termed the chronic rheumatic group, frequent relapses result in progressive carditis and the development of permanent cardiac insufficiency. This chronic or relapsing type of carditis is one of the most serious and intractable forms with which we have to deal. It leads to permanent and extensive changes in the myocardium, which are first inflammatory and exudative and later fibrotic. Pericarditis, at first inflammatory and exudative and later adhesive, is frequently noted in patients included in this group.

It may be of interest to review briefly a few of the more serious forms of rheumatic heart disease observed at The Children's Hospital.

Case I. (No. 28-3060) — A colored male child, aged 4 years, was admitted to hospital December 17, 1931. His past history revealed that he had had measles, pertussis, and occasional upper respiratory infections. No history of rheumatic infection could be elicited. It was stated that for the past two months the patient had been breathing with difficulty and that for two weeks he had coughed a great deal, vomited, and complained of pain in the epigastrium.

On admission his temperature was 100° F., his radial pulse 110 beats per minute, and his respiration 28 per minute. His blood pressure was 100 mm. systolic and 68 mm. diastolic. He was anemic, had an upper respiratory infection, and appeared acutely ill. A working diagnosis was made of rheumatic heart disease, endocarditis, myocarditis, pericarditis, dilatation, and cardiac insufficiency.

His temperature during hospital residence ranged from 98° F. to 101.1° F., his heart rate from 60 to 160 beats per minute, and his respiration from 20 to 60 per minute. His hemoglobin gradually dropped from 46 per cent to 33 per cent. His red-cell count remained approximately 3,000,000; the leucocytes were between 8,000 and 16,000; and the polymorphonuclears rose from 52 per cent to 62 per cent. Electrocardiograms taken December 30, 1931, January 13, 1932, and February 4, 10, and 24, 1932, revealed tachycardia, auricular and ventricular rates 130 beats per minute, and deep Q waves in lead III, but were otherwise not significant. However, on March 10, two months following admission, an electrocardiogram demonstrated the presence of two-to-one heart block auricular rate 120 and ventricular rate 60 beats per minute (Fig. 1). On the morning of March 16th an electrocardiographic study showed the auricular rate to be 130 beats per minute and the ventricular rate 120 per minute with occasional runs of two-to-one heart block and slight spreading of the P-R interval. The patient died that evening. An autopsy performed by Dr. Janvier W. Lindsey gave the following findings: The heart, which was dilated, measured 11 centimeters transversely and 8.5 centimeters vertically. Several patches of yellowish filmy exudate were found over the anterior portion of the organ. Over the posterior portion of the auricular surface a filmy exudate and a markedly dilated red cord, apparently the coronary vessel, were noted. No pathological condition was observed in the lining of the heart, though there was a suggestion of a fine fibrinous exudate beneath the leaflets and along the edges of the mitral valves. In the micro-

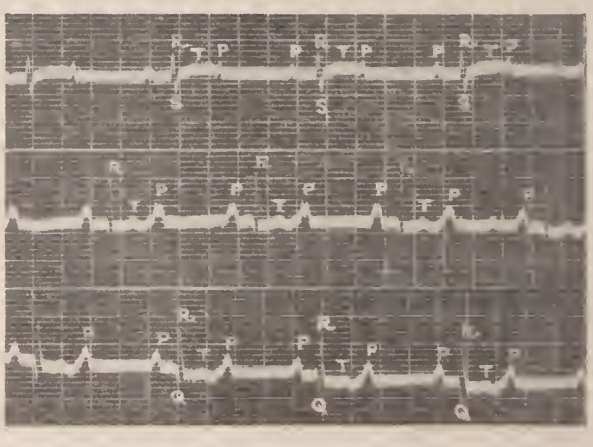


Fig. 1.—Case I. March 10, 1933. Auricular rate 120, ventricular rate 60. P-R interval .20. QRS interval .03. Axis plus 80°. P1, 2 split. 2:1 block.

scopical examination of heart tissue a number of areas were found in which definite cellular infiltration was noted between the muscle fibres, with a consequent distortion of the arrangement of the fibres. These infiltrations were thought to be inflammatory in character. In the muscle tissue approaching the endocardium an extensive inflammtory infiltration was noted, but it was not demonstrated that this inflammtory process produced an actual endocardial exudate, though it was thought to explain the suggestion of exudate along the edges of mitral valve observed on gross examination. The surfaces of the lungs were found to be marked by a number of dark splotches varying from tiny points to extensive irregular areas, most numerous in the right lung. On section, a number of recent areas of infarction were noted. The surface of the kidneys was dark and definitely congested. The capsule stripped readily leaving a smooth surface. On section marked congestion was noted.

Case II. (No. 28-4905)—The following case of rheumatic heart disease is of special interest because of the development of rheumatic nodules prior to the appearance of a distinct syndrome of rheumatic fever. A colored female child, 8 years of age, had a past history of measles, pertussis, and chicken pox. There was no history of tonsillitis or rheumatism; there had been, however, a tonsillectomy and an adenoidectomy in 1930. In May, 1932, small rheumatic nodules first appeared on the child's head and extremities. One month later she had a typical attack of rheumatic fever, with pain and swelling of the joints, elevated temperature, and precordial pain. On July 20, 1932, she was admitted to The Children's Hospital.

On admission her temperature was 99° F., her heart rate 90 beats per minute, and her respiration 20 per minute. There was slight enlargement of the pulmonary conus. A systolic mitral murmur was present which was transmitted to the axilla. A thrill was palpable in the apex. The lungs were clear, the liver was normal in size, and the spleen was not palpable. The hemoglobin was 59 per cent, the red cell count 4,450,000, and the white cell count 10,400, of which 18 per cent were lymphocytes and 82 per cent polymorphonuclears. A working diagnosis of rheumatic heart disease, mitral incompetency, and secondary anemia was made. Numerous moderate-sized rheumatic nodules were present on the skull, the condyles of the radius, and the fingers. A nodule on the radius was excised and on section it presented the histologic appearance of Aschoff bodies. The patient improved under hospital care, and was discharged three weeks after admission with instructions to remain in bed for several months. She was brought to the Cardiac Clinic every two weeks for observation and further instruction in diet and care.

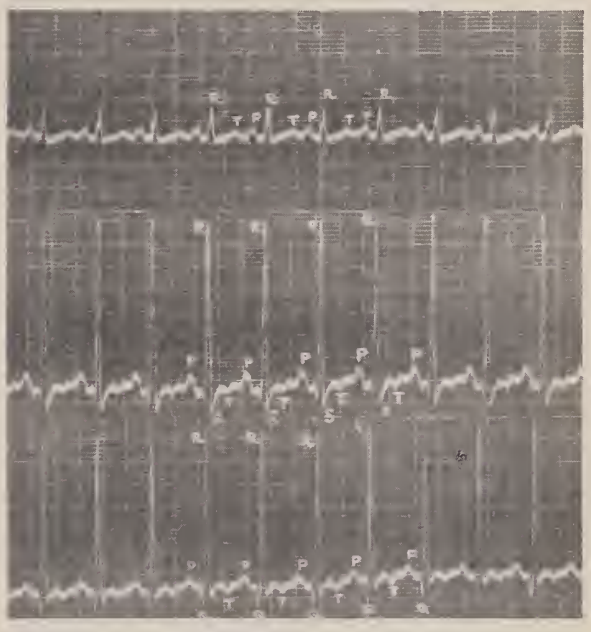


Fig. 2.—Case II. May 12, 1933. Auricular and ventricular rate 130. P-R interval .18. QRS interval .05. Axis plus 84°. R1, 2, 3 split. R1 notched. T2, 3 inverted.

The patient was re-admitted on December 1, 1932, four and a half months after discharge. The temperature was 100° F., and the heart rate 100 beats per minute. The heart was now enlarged in all diameters. A distinct systolic and diastolic murmur was heard in the apex. P_2 was accentuated. The rheumatic nodules formerly noted were still present. Five newly formed ones appeared during the next two days. Those on the skull were from two to four millimeters in diameter. A roentgenogram of the heart taken at six feet standing, December 8th, showed an enlargement of the pulmonary conus and the left ventricle. In an electrocardiogram taken December 5th the heart rate was shown to be 120 per minute, and there was a high take-off of the S-T segment in leads I and II.

The child improved and was discharged on February 2nd. She remained in bed at home except for visits to the Cardiac Clinic. During March she complained of pain in the left

shoulder and the precordium. On April 14th she was hospitalized for the third time. When admitted she had extensive rheumatic nodules on the skull, along the spinal column, and on the extremities. There was moderate edema of the face. The liver was enlarged. Dullness and crepitant rales were present in the bases of both lungs. The heart was enlarged in all diameters. A systolic and diastolic mitral murmur and a systolic aortic murmur were noted. A thrill was elicited at the apex. An electrocardiogram taken May 12, 1933, demonstrated a tachycardia, auricular and ventricular rates 130 per minute, and an inverted T-wave in leads II and III (Fig. 2). The child was discharged on June 22, 1933, unimproved.

Case III. (No. 31-2625)—A colored male child, aged 9 years, was admitted to hospital May 13, 1931. Three years previously he had been confined to bed for a period of two weeks with pain in his joints. Subsequent to this attack he had three similar ones. For a week previous to admission he had been in bed with an elevated temperature, headache, precordial pain, dyspnea, cough, vomiting, and diarrhea. Papular spots resembling measles, it is stated, were scattered over the body. The temperature on admission was 102° F., the heart rate 60 per minute, and the respiration 60 per minute. The heart was found to be enlarged in all diameters. There was a diastolic and a systolic murmur in the mitral area, and a systolic and diastolic murmur in the aortic area. A distinct pericardial friction rub was present. There was dullness and numerous rales noted in the bases of both lungs. The liver was markedly enlarged, and the spleen also was enlarged. A roentgenogram taken at six feet standing, May 19th, showed an enlargement of the cardiac shadow which was interpreted as an evidence of pericardial effusion; however, physical examination demonstrated cardiac dilatation. An electrocardiogram taken May 22nd revealed a two-to-one heart block, the auricles beating at the rate of 160 pulsations per minute and the ventricles at the rate of 80 per minute. The hemoglobin was 48 per cent, the red cell count 3,600,000, and the white cell count 15,400, of which 7 per cent were lymphocytes and 93 per cent polymorphonuclears. The urine contained albumen and hyaline casts. A working diagnosis was made of rheumatic heart disease, acute dilatation, myocarditis, endocarditis, pericarditis, and secondary anemia.

An electrocardiogram taken June 4, 1931, again showed a two-to-one heart block, auricular rate 160 beats per minute and ventricular rate 80 per minute (Fig. 3). Eight days later, June 12th, an electrocardiogram revealed an auricular fibrillation, ventricular rate 100 beats per minute (Fig. 4).

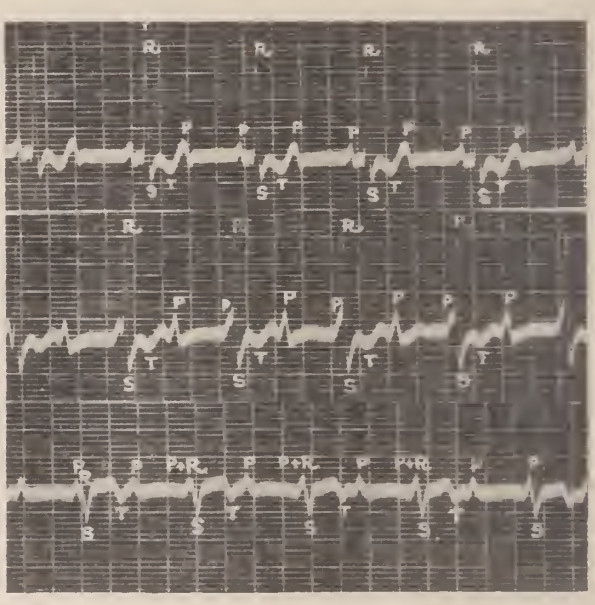


Fig. 3.—Case III. June 4, 1931. Auricular rate 160, ventricular rate 80. Axis plus 20. T1, 2, 3, diphasic. 2:1 block.

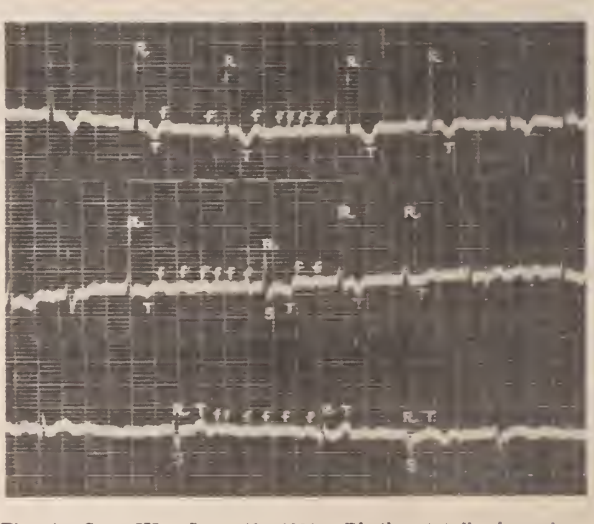


Fig. 4.—Case III. June 12, 1931. Rhythm totally irregular. Ventricular rate 100. Axis plus 10°. T1 inverted. Auricular fibrillation.

During the three months that the patient was hospitalized he was given two transfusions, the first one on June 6th and the second one a week later. Following the transfusions the acute symptoms ameliorated and this improvement continued. On August 10, 1931, he was

discharged as improved, his disease having become quiescent.

On April 14, 1932, a year following his first admission, he was re-admitted because of acute pain in his knees and elbows. His temperature on admission was 104° F., his heart rate 102 per minute, and his respiration 60 per minute. The large vessels of the neck pulsated. The pharynx was hyperemic. The heart was enlarged in all diameters. A systolic and diastolic murmur was present at the apex accompanied by a diastolic rumble. A systolic murmur was also heard over the aortic area. A roentgenogram taken at six feet sitting showed the heart to be dilated. The electrocardiograms showed a deep Q-wave and an inverted T-wave in lead III. The hemoglobin was 49 per cent, the red cell count 3,950,000, and the white cell count 10,700, of which 27 per cent were lymphocytes and 73 per cent polymorphonuclears. The urine contained a large amount of albumen.

During this second period of hospitalization the patient received one blood transfusion and violet light therapy every other day over a period of five weeks. During residence there was slight improvement. The child was discharged on June 12, 1932, two months after admission. One month later he was re-admitted, complaining of dyspnea, edemea of the ankles, and vomiting. The following day he was transferred to Freedman's Colored Hospital, where he remained under treatment for two months. On August 11, 1932, he was discharged improved. On November 17, 1932, he was re-admitted and a diagnosis was made of aortic insufficiency and mitral lesion following rheumatism. The patient died on January 14, 1933, two months after admission.

Case IV. (No. 29-1623)—A colored boy, 11 years of age, was admitted to hospital April 20, 1929, after having had repeated attacks of rheumatism over a period of approximately a year and a half. His temperature on admission was 100.6° F., his heart rate 148 beats per minute, and his respiration 55 per minute. There were dyspnea, cyanosis of the lips, and pitting edema of the lower extremities. The abdomen was distended and tense. The liver was enlarged. Dullness and medium crepitant rales were present at the bases of both lungs. The cardiac sounds were muffled. A systolic and diastolic murmur was heard in the apex. A roentgenogram taken at six feet standing showed cardiac dilatation. The hemoglobin was 69 per cent and the red cell count 4,560,000. The urine was essentially negative. The Wassermann was also negative. A working diagnosis was made of rheumatic heart disease, cardiac dilatation, myocarditis, and endocarditis.

The patient was discharged from hospital November 12, 1929, after a seven months' residence. The systolic and diastolic mitral murmur as well as the systolic aortic murmur persisted. The patient returned to the Cardiac Clinic for periodic examinations. On March 4, 1930, he was again hospitalized. His temperature on admission was 103° F., his heart rate 120 beats per minute, and his respiration 45 per minute. The left thorax, anteriorly, was found to be bulging. The enlargement of the heart and also the systolic and diastolic mitral murmur and the systolic aortic murmur noted in previous examinations remained present. A roentgenogram showed the heart to be unchanged in size. On April 19, 1930, six weeks after admission, the patient was discharged.

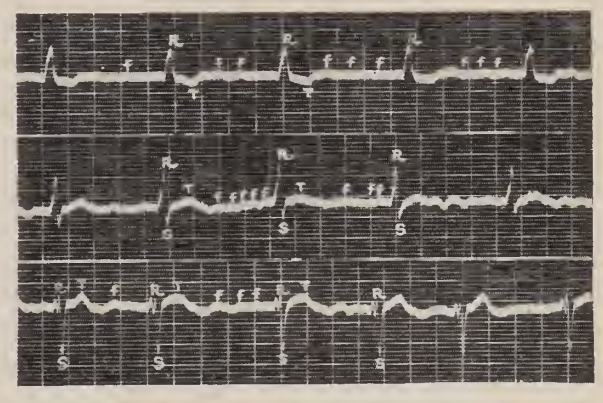


Fig. 5.—Case IV. August 4, 1931. Ventricular rate 70. Axis Minus 50°. Left axis deviation. Auricular fibrillation.

On July 22, 1931, he was admitted to Emergency Hospital because of nausea, vomiting, and marked dyspnea. On admission he was in extreme cardiac distress. His skin was cold and clammy, and there was profuse perspiration of his face, hands, and feet. The forceful action of his heart shook the entire bed. The heart was uniformly enlarged and there was a definite broadening of the aortic arch. The heart rate was approximately 130 beats per minute. At times ventricular extrasystoles were noted. There was a loud systolic and diastolic mitral murmur and a systolic and diastolic aortic murmur. A collapsing pulse was present. The blood pressure was 110 mm.

systolic and 0 mm. diastolic. The hemoglobin was 75 per cent, the red cell count 4,250,000, and the white cell count 14,600, of which 33 per cent were lymphocytes and 65 per cent polymorphonuclears. The urine contained hyaline and granular casts. A roentgenogram of the heart showed a contour suggestive of mitral stenosis and pericardial effusion. An electrocardiogram taken August 4, 1931, demonstrated auricular fibrillation, ventricular rate 70 beats per minute (Fig. 5). A working diagnosis was made of rheumatic heart disease, mitral stenosis and incompetency, aortic stenosis and incompetency, auricular fibrillation, and cardiac dilatation. On October 30, 1931, the patient developed acute pericarditis, and on November 3, 1931, three and a half months after admission, he died.

An autopsy was performed by Dr. C. G. Aronstein, who recorded that the pericardial sac was found to contain about 300 cubic centimeters of cloudy yellowish-green fluid. Numerous pleuropericardial adhesions were present. The heart was enlarged, grade four, and filled the entire anterior left chest except at the apex. The myocardium was rather soft and inflamed in appearance. The left ventricle was dilated, grade four, and the right ventricle was hypertrophied to about one centimeter in thickness. An anatomical diagnosis was made of rheumatic myocarditis and pericarditis with fibropurulent effusion (right hypertrophy and bilateral dilatation), diffuse bronchopneumonia, severe fatty degeneration of the liver, and multiple splenic bacterial emboli.

It is of interest to note that at autopsy no gross changes were present in the valve leaflets, although during the course of the disease all the recognized physical signs were present of mitral stenosis and incompetency, plus aortic stenosis and incompetency.

Case V. (No. 27-155)—A white female child, six years of age, was admitted to hospital, July 23, 1928. Her temperature on admission was 99.4° F., her heart rate was 168 beats per minute and totally irregular, and her respiration 30 per minute. She gave a past history of having had scarlet fever, alveolar abscesses, and "sore throats." Her heart had been rapid and irregular during the previous two years. A roentgenogram showed the heart to be enlarged 3 per cent. There were no murmurs present. A working diagnosis of tachycardia was made by her attending physician, and the auricular waves in the electrocardiographic tracing which was taken were interpreted as being wandering P-waves. She was discharged, seven days following admission, as improved. Her heart rate however, continued rapid and arrhythmic.
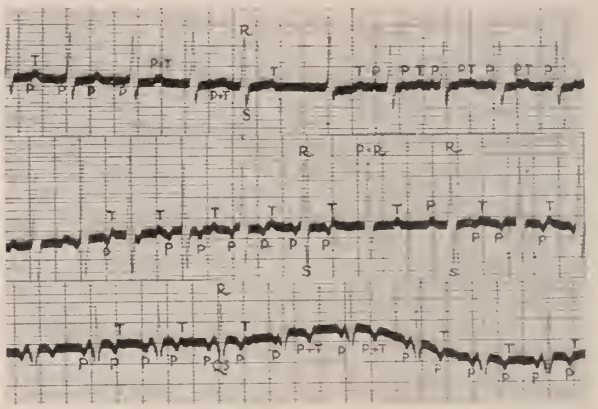


Fig. 6.—Case V. April 27, 1929. Rhythm totally irregular. Auricular rate 210. Ventricular rate 130. Axis plus 60°. Ectopic auricular tachycardia bordering on flutter, with varying block due either to the circus movement in the auricles momentarily taking another course or to the sinus node becoming dominant for a moment.

The patient was admitted to my service on April 8, 1929, ten months subsequent to her first admission, with a recent history of repeated nasal and oral hemorrhages which followed an attack of whooping cough two months previously. The temperature on admission was 101.4° F., the heart rate 130 beats per minute, and the respiration 40 per minute. The heart was slightly enlarged, and its action was arrhythmic. There was a faint systolic murmur heard in the mitral area and the aortic first sound was accentuated. The lungs were clear, the liver was normal in size, and the spleen not enlarged. No edema was present. The hemoglobin was 80 per cent, the red cell count 4,550,000, and the white cell count 17,400, of which 49 per cent were lymphocytes and 51 per cent polymorphonuclears. The urine was essentially negative. The tonsils were hyperemic and cryptic. The blood Wassermann was negative. An electrocardiogram taken April 27, 1929, demonstrated the presence of auricular tachycardia with block (Fig. 6). A working diagnosis was made of rheumatic heart disease, myocarditis, and auricular tachycardia with block. During her residence from April 8, 1929, to July 20, 1929, she was symptomatically treated for her rheumatic carditis, and on one occasion, after the administration of quinidine sulphate, a normal sinus rhythm was established. However, because of

nausea, the drug was discontinued by the resident physician and the arrhythmia became re-established. The patient was discharged July 20, 1929, improved, but the tachycardia with block continued.

After discharge from hospital she was kept quietly at home, was digitalized according to the Eggleston's method, and maintained on a daily dosage of one and one-half grains of the powdered leaf. No change was produced in the arrhythmia. On July 9, 1930, she had a tonsillectomy. She was continued on digitalis, and on August 19, 1930, a regular rhythm was established. Since that period until the present time, December 1, 1933, she has maintained a normal rhythm with the one exception of a few days when she had an acute upper respiratory infection, contracted September 13, 1933. Absolute rest, salicylate of sodium, and digitalis re-established a normal rhythm.

Treatment

Due to the fact that acute carditis in children is almost always secondary to a rheumoidal infection, it is to the latter condition primarily that treatment must be directed.

In the case of an acute attack of rheumoidal disease the possibility of carditis must ever be kept in mind. Treatment by means of sodium salicylate and sodium bicarbonate must be initiated at once and thoroughly carried out. Fifteen grains of sodium salicylate and fifteen grains of sodium bicarbonate, or more, in combination, should be given three times a day after meals. It is desirable and advisable as a prophylactic measure to continue for a time the monthly administration of sodium salicylate and sodium bicarbonate, fifteen grains each, for a period of ten days. Whenever an upper-respiratory infection occurs in a rheumatic child, the salicylate treatment should be initiated immediately. It must be distinctly borne in mind that sodium salicylate administered in large doses may produce acidoses; consequently, when sodium salicylate is being administered in large doses over a long period of time, the symptoms should be closely watched and the urine examined frequently for diacetic acid and acetone. If symptoms of acidosis appear, the discontinuance of the drug for twenty-four or forty-eight hours and the administration of a purgative will usually relieve the condition. Sodium salicylate administered in large doses may cause the red corpuscles to break down rapidly. In the event this occurs, transfusions should be given. In the treatment of the rheumoidal state, absolute rest should be instituted and sufficiently prolonged. When there are definite signs of active carditis, a rest period in bed of six months or longer may, in a first or second attack, restore the normal function of the heart. If the first attack is properly and thoroughly treated a large percentage of cases will make a complete recovery. The thorough treatment of a second attack may also bring good results, but subsequent attacks of rheumatic carditis cannot be treated with any degree of success.

In all cases of rheumatic carditis, infected tonsils and teeth as well as upper respiratory infections should receive appropriate treatment. The removal of carious teeth and infected tonsils is not a cure for rheumoidal conditions, nor will it prevent or minimize future attacks of rheumatic carditis. The procedure is justified, however, because of the improvement in the general health of the child which, it has been observed, frequently follows the removal of a focus of infection. If a tonsillectomy or a dental extraction is decided upon, the procedure should be instituted only after the child's temperature and heart rate have been normal for a month or six weeks, or until it is reasonably certain that the disease has reached an inactive stage. Salicylate of sodium should then be administered three times daily for ten days before interference and for a period of ten days following, as a prophylactic measure.

Pharyngitis in the rheumatic child has, in many instances in my experience, been the forerunner of a renewed attack of carditis. I have repeatedly noted this in the Cardiac Clinic. Every precaution should, therefore, be taken to protect the patient from extreme changes of temperature, from dampness, cold, and draughts. He should also be absolutely isolated from individuals suffering from upper-respiratory infections. Bronchopneumonia is, unfortunately, a frequent accompaniment of rheumatic carditis. The records of The Children's Hospital show that during the past five years 22 per cent of the deaths occurring in cases of acute carditis resulted from bronchopneumonia. Children having acute rheumatic carditis should constantly wear a light woolen undergarment during the winter months as an additional protection.

Secondary anemia is an almost constant ac-

companiment of active rheumatic carditis. When it is observed that the hemoglobin is 50 per cent or below, I believe that the giving of periodical blood transfusions is indicated. I have noticed a striking improvement following this procedure. Violet-light therapy may also be tried.

The diet should be nourishing, high in carbohydrates, and easily digested. Large feedings are contra-indicated in the active stage of the disease. Frequent feedings should be given and in small amounts. The fluid intake should be restricted when there is retention or edema. In the congestive state of rheumatic heart disease the quantity of fluid intake and of urine excreted should be observed and recorded. The intake should be controlled so that it will not vary too widely from the output. In practice it is believed that the urinary output should not fall below 50 per cent of the fluid intake. My observations lead me to believe that when the quantity of urine excreted is being reduced too far below the intake, the administration of ammonium chloride, in salol-coated capsules, in large enough doses will produce diuresis.

Digitalis therapy, it has been observed, has not always been administered in the present-accepted form or dosage. In my experience very good results have been obtained in selected cases by the use of a standardized powdered leaf of digitalis administered according to the method of Eggleston; that is, 1½ grains given for every ten pounds of body weight, plus 1½ grains per day during the period of digitalization to compensate for the amount eliminated in the twenty-four hour period, after which 1½ grains given daily as a maintenance dose. As occasion arises three grains may safely be administered on alternate days, provided that the dosage is controlled by frequent electrocardiographic readings. The administration of digitalis in sufficient amounts to reduce the heart rate in cases of carditis without considering the Eggleston dosage or frequent observation of the electrocardiographic tracings may prove disappointing. I have observed many cases of heart block in children suffering from acute carditis. It is now generally conceded that children will stand larger doses of digitalis per body weight than will adults. The Eggleston method, however, is only a working basis for the establishment of the patient's optimum dose. I have likewise observed that there is less gastric disturbance with the administration of the powdered leaf in salol-coated capsules. I have had no experience in administering digitalis to a child under four years of age.

In the acute stage of rheumatic carditis with an elevation of temperature, rapid heart action, and the presence of arrhythmias such as changing blocks and extrasystoles, digitalis must be administered with great caution or withheld, even though the accompanying signs and symptoms of cardiac insufficiency are present. In these instances theocalcium and the salicylates are the most useful drugs of selection. It has been my observation that all cases of active rheumatic carditis respond more favorably when treatment is initiated by salicylate therapy and rest rather than by treating the carditis *per se*. All cases of established rheumatic heart disease should, I think, be given rations of salicylate of sodium three times a day over a ten-day period monthly during the autumn, winter, and spring, as a prophylactic measure.

This dictum does not apply, however, to the cardiac patient who has passed the active stage of his disease. When and if the active manifestations of the rheumoidal condition subside and there is still present dilatation, pulmonary congestion, enlargement of the liver, and an absence of changing heart block, digitalis has a rightful place in the treatment. Its use is especially indicated in cases in which auricular fibrillation has developed. It is in these two conditions that digitalis has its greatest value.

Summary

1. Rheumatism is the most frequent cause of heart disease in children.

2. Rheumatic heart disease in its early stages is in many instances accompanied only by mild and fleeting symptoms of rheumatic fever, and then the disease may go unrecognized until signs of cardiac insufficiency appear.

3. When early treatment is instituted and sufficiently prolonged, a mild attack of rheumatic carditis may subside without leaving evidences of permanent damage to the myocardium or functional disturbances.

4. The effective treatment of rheumatic heart disease is the early and thorough treatment of the initial attack with adequate precautions against subsequent attacks.

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CAESAREAN SECTION.*

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1. *Definition:* The term caesarean section, caesarotomy (and hysterotomy in a limited sense) refer to the removal of the products of conception from the uterus by means of an incision into the uterus through the abdominal or vaginal route.

2. *Derivation of Term:* The term caesarean section is probably a redundancy from "partus caesareus (cedere, to cut) or "caesus e matris utero—" meaning an act of parturition, or *birth* by aid of an incision or cutting.

The theory of Julius Caesar being born this way is not considered authentic, and, in fact, the operation was being done many years before his time, according to historical records.

3. *History:* It seems the operation was first done on a recently dead mother in order to save the life of the child, the Lex Regia of Numa Pompilius, 715 B. C., requiring this operation to be done before burial of a woman who died near term. This law or custom, if not originated by a religious influence, was at least in later years definitly encouraged by religious teachings, in order to baptize the child.

Omitting details of the history of this operation for a number of years, we find in the year 1500 A. D. the first record of this operation being done on a living woman—Jacques Nufer, a swine-gelder of Siegerhausen, Switzerland, operating on his wife by abdominal caesarean section after a dozen midwives and several barbers had failed to deliver her.

The vagueness of historical records is, however, impressed upon our minds when we recall that Felkin in the year 1879 witnessed this operation, in the central part of Uganda, by a native who used banana wine, both as an antiseptic and anesthetic (the patient being well intoxicated from its effects). The abdominal wound was closed with pins and figure of eight stitches and dressed with a paste made of herbs. The patient recovered in eleven days with a maximum temperature of 101° F. How long these natives had been doing this operation and with what success, no one knows.

4. *Indication for Operation:* The question as to when a caesarean section should be done is probably one of the most difficult problems confronting a physician in the general practice of medicine, and, in my opinion, more mistakes are made in arriving at the best conclusion in these cases than anything else we have to decide. From my own personal experience, I conscientiously and sincerely feel that I have made many mistakes trying to deliver a baby by the natural route with artificial aid, but so far have never regretted doing a caesarean section—because of the very splendid results to both mother and baby.

In short, it is my opinion that when the welfare of both mother and baby can be improved by a caesarean section, whatever the indication therefor, then it should be done. If a doubt arises in the opinion of the attending physician, either have a consultant see the case, or advise a caesarean section, as I truly believe less harm is done by caesarean sections, as a general rule, than complicated deliveries by other means.

From 1500 to 1877 A. D., the operation of caesarean section seems to have been done frequently, and with a very high mortality, on account of the fact no effort was made to close the wound in the uterus. Most of the patients died from hemorrhage or infection. In 1877, Porro, of Pavia, in order to avoid dangers of hemorrhage and infection, advised the supravaginal removal of the uterus after the child was delivered, and the stump of the uterus was sutured into the lower angle of the wound. This was a great advance in the operation of caesarean section, and cut down the mortality rate a great deal by preventing hemorrhage and infection.

1882, Sanger developed a technique of operation in which the incision in the uterus was closed with sutures and returned to the ab-

*Read before the Southwestern Virginia Medical Society, at Wytheville, Va., September 15, 1933.

domen or removed, as indicated. This was the *really great* advance in this operation, for, with few modifications or improvements, it is the operation most generally done today, namely, a mid-line incision in abdomen and uterus, delivery of baby, and closure of both wounds with the strictest surgical asepsis that can be obtained.

5. *Comments and Criticisms:* There are two cardinal points in the Sanger operation I desire to discuss—namely, the use of a rubber ligature or tourniquet around the cervix to control hemorrhage and to avoid suturing the decidua. The last of the two seems to have survived to date, and the first, in my experience, the most important, seems to have been discarded. The tourniquet also has been accredited to Litzmann to prevent or combat hemorrhage, but Henry Jellett, of Ireland, says "It is an unnecessary precaution, and is said to interfere with the subsequent contraction of the uterus," and then proceeds to tell how to control hemorrhage by means of an assistant grasping with his hands the lower segment of the uterus, etc.

An experience of twenty-five years with over a hundred cases of caesarean section does not seem quite compatible with the caution embodied in the textbooks of our recognized authorities against the use of the tourniquet and sewing up of the mucosa or decidual lining of the uterus. It has always been our custom to use the tourniquet and also to close the incision in the uterus with a continuous double No. 2 catgut (plain or chromic) including all layers of the uterus, except the peritoneum, which is closed by the same stitch, reversing direction and inserted as a baseball stitch in order to give more perfect approximation, tying one knot at lower end of incision, where the first layer of sutures started. Our results have been so satisfactory that we are glad to report these cases with results.

6. *Report of Cases:* During the past twenty-five years we have operated on approximately one hundred cases, approximately two-thirds of which were term cases. Some of these cases were operated on in their homes, some moved from the operating room to their homes without entering the hospital, and some prior to the year 1922; therefore our records are limited except in seventy-two cases operated on in the New Altamont Hospital from 1922 to July, 1933. We can, however, certify that a number of the cases operated on have subsequently given birth to one or more children, and a few cases have had subsequent operations, including caesarean sections, and in no instance have we observed the presence of adhesions, or any ill results from a weakening of the uterine wall.

Of the seventy-two cases operated on from 1922 to 1933, there was one death, which occurred a few hours after delivery, the patient having been in labor for twenty-four hours. She had four plus albumin and was unconscious on admission; also efforts to deliver by forceps and version had been resorted to without success.

In this group of patients we have included all patients treated by this operation during this period of time in the hospital from whatever source and whatever the indication or condition of the patient, such as contracted pelvis, placenta praevia, eclampsia. The big majority had been in labor for some time, and delivery had been attempted by other means.

Average number of days in the hospital after operation, 13.29 days.

Longest time of any patient, 31 days.

Shortest time of any patient, 5 days, except the one patient that died four hours after admission.

Lowest annual rate, 1933, 10.46 days.

Highest annual rate, 1922, 19 days.

Twenty-five of this group operated on before the period of viability.

In none of the cases was the baby born dead, if alive when operation started; however, some of the babies did die from prematurity or other causes during the first few hours or days in the hospital, but none from the effects of the operation, so far as we can judge.

7. *Technique of Operation:* Anesthetic, local, spinal or general.

Mid-line or right rectus incision, long enough to deliver uterus from abdominal cavity, at which time presenting part of child is lifted from pelvis to permit a ¼ inch rubber tube to be placed around upper cervix, including broad ligaments, but below presenting part. This is drawn tightly and clamped with forceps in mid-line below, and sufficient torsion is made with forceps to control hemorrhage at all stages of operation Next, the abdomen and contents are protected by two towels placed longitudinally and clamped tightly around uterus above and below, while two more towels are placed transversely and clamped tightly around uterus and to fold of broad ligaments

in order to secure further protection against soiling the abdominal cavity or contents. Midline incision in uterus is then made and baby delivered, cord clamped, cut and delivered to nurse. Amount of time necessary for the operation up to this time is about four or five minutes. At this stage the placenta is removed with all membranes of any size, uterus dried out with gauze sponges, and wiped out with wet alcohol sponges. At this time it is usually necessary to tighten the tourniquet just a little to prevent oozing of blood. You now have a clean dry field. The closure of the opening in the uterus, as above outlined, is very quickly done. Exposed part of uterus is now cleansed with alcohol gauze, dried, and tourniquet released, and, if there is no bleeding present, the clamp and towels are removed and uterus returned to abdominal cavity. The abdominal wound is closed in the usual manner. We formerly used pituitrin, 1 c.c., at this stage of the operation, but only use it now as indicated by subsequent uterine inertia, which, thus far, I do not recall we have ever had to do. The speed of recovery and freedom of post-operative complications seems to depend largely on the protection from hemorrhage and shock, and also from soiling the abdominal cavity and contents. Both of these can be almost perfectly controlled by the tourniquet and proper use of towels after delivery of uterus and far better than trying to complete the operation while the uterus is in the abdominal cavity. The control of hemorrhage not only expedites the operation, but enables an operator to take his time, see what he is doing, and, furthermore, helps a great deal in keeping the abdominal cavity clean.

Summary

1. Use of the tourniquet around upper cervix, as recommended by Sanger and Litzmann, expedites operation, protects against hemorrhage and contamination of abdominal contents, and enables the operator to see more clearly what he is doing, thereby making for a quicker and better piece of surgery.

2. Use of tourniquet does not interfere with contraction of uterus, and is free of any damage in our experience.

3. Delivery of uterus enables an operator to better protect the abdominal contents, as above outlined.

4. Closing of mucous membrane or decidua with the continuous stitch, together with other layers of uterus, has no disadvantages in our experience.

5. Closure of peritoneum over incision in uterus with baseball stitch gives more strength and better approximation, thereby reducing probability of adhesions.

CELIAC DISEASE WITH OSTEOMALACIC-LIKE BONE CHANGE.*

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and
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Celiac disease was first recognized by Gee (1888) who described it as follows:

"There is a kind of chronic indigestion which is met with in persons of all ages, yet is especially apt to affect children between one and five years old. Signs of the disease are yielded by the feces; being loose, not formed, but not watery; more bulky than the food taken would seem to account for; pale in color, as if devoid of bile; yeasty, frothy, an appearance probably due to fermentation; stinking, stench often very great, the food having undergone putrefaction rather than concoction. The pale loose stool looks very much like oatmeal porridge or gruel. The hue is somewhile more yellow, otherwhile more drab.

"The patient wastes more in the limbs than in the face, which often remains plump until death is nigh. In the limbs, emaciation is at first more apparent to hand than to eye, the flesh feeling soft and flabby."

According to Bennett, Hunter and Vaughan (1932) it usually comes on from the ninth to the twenty-fourth month of life, but may not make its appearance until adult life. It is

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Thanks are hereby extended Dr. W. T. Graham and the staff of the Crippled Children's Hospital, Richmond, Va., for referring this case to us for this study. We also wish to thank Dr. Alfred F. Hess for reviewing the findings in the case with us.

primarily a nutritional disturbance accompanied with diarrhea and sometimes vomiting. The stools usually contain a large per cent of fats and fatty acids. The abdomen is usually distended and enlargement of the colon is generally present. Calcium metabolism is likely to be upset; associated with it may be one or more of the following diseases: tetany, rickets, osteomalacia, and anemia.

The digestion of the fats in the food is most upset, but carbohydrate digestion and absorption is also much impaired. The protein element is taken care of as in a normal person.

Sometimes periods of exacerbations alternate with periods in which the stools are more normal in appearance and constituency. The child, if the condition continues, becomes stunted in growth, and this fact with the stool findings has given rise to the term intestinal infantilism.



Fig. 1.—Three views of case taken when patient was nearly nine years old. They show: (a) marked shortening of one leg, (b) spinal deformity, (c) chest and ulnae deformities.

The diagnosis can be made from the stool, history, and physical appearance of the patient. Large quantities of fatty acids and soaps in the stool—pale gray color, copious, soft but not watery, frothy, with a marked stench, makes the diagnosis certain. There may or may not be present infantilism and there may or may not be bone deformity.

The writers have recently had come under their observations a case with bone symptoms and deformity much more marked than usually seen in the disease. The bone condition in many respects resembled osteomalacia, although the blood picture was not typical of that disease.

Mattie P., aged eight years and ten months, weighing thirty-two and one-half pounds, was placed in our care in the Dooley Hospital for calcium and phosphorus metabolism check.

Family History:—The father and mother are living and well. The mother was not so well about the time of the birth of this child. The parents are third cousins. There are three brothers and three sisters, all older than Mattie, and all living and well.

Past History:—The child was a full-term baby, weighed ten pounds at birth, and seemed normal and grew normally the first year. After being weaned, she drank about one and one-half pints of milk daily, and though her father reports her bowels inclined to be loose, there seems to have been no marked digestive disturbance. When the child was about a year old, the parents noticed that she was not developing normally. The child's arms began to bow as she pushed herself over the floor and the legs bowed badly as she tried to walk.

When she was six years and ten months old, she was admitted to the Crippled Children's Hospital, Richmond, for study and treatment. X-ray pictures showed moderately severe rickets in some of the epiphyses and much rarefaction of the shafts of some of the bones. Spontaneous fracture of the shafts of

both ulnae, of one tibia, fibula, femur and at least one rib were evident. The diagnosis of rickets was made and the child was put on cod-liver oil, 1 dram t.i.d., viosterol 250 D., 10 M. morning and evening, and ultra-violet light four times a week.



Fig. 2.—X-ray pictures showing marked thinning of shadows of bones. Note thinning of cortex, and fracture without displacement.

Under this treatment the diaphyseal and epiphyseal abnormalities cleared up but the shafts of the bones showed no improvement in the osteoporosis. Osteotomies done on two of the long bones for the purpose of straightening were very slow in healing. One was four months in healing, and the second remained uncalcified at the end of a year. The majority of the spontaneous fractures were unhealed at this time.

The scalp and hair were normal, parietal bosses were prominent, eyes and nose essentially negative, and the teeth were normal in number and constituency. There were no cavities, and only two fillings were present.

Her antero-posterior chest diameter was increased (15 cm.) and the diameter from side to side much decreased (14 cm.). The dorsal spine had a kyphosis and a marked right lateral scoliosis and a deep lumbar lordosis. There was a good coat of tan over the entire body. The neck appeared very short, due to the marked curvature and, therefore, shortening of the spine. The pelvic girdle did not appear abnormal but the pelvis was badly tipped laterally, the left side being higher. Healed fractures of both clavicles at the junction of the outer with the middle thirds left large protusions over the sites. The upper arms were of normal length and contour but each forearm showed an inward and backward bowing, due to fracture of each ulna two inches below the olecranon. The right femur was straight but the left showed a marked anterior-external bowing, which made the corresponding thigh three cms. shorter than the other. The right tibia was bowed forward and inward while the left was comparatively straight. She had no pain, but when pressure was made over the bones badly affected she would flinch, when she would not over more normal bones. Mentally, the child was rated by a psychologist as in the low normal group.

The case resembles osteomalacia in that the fractures were transverse and subperiosteal with angulation but no displacement, the severe osteoporosis of some bones while others appeared normal, and moderate pain over the affected bones. The blood calcium was in the low normal group (9.9 mgs.) and the phosphorus was high (6 mgs.). These blood findings are not usual in osteomalacia—the blood calcium and phosphorus being usually considerably lower in the latter disease (Wampler, 1933).

The case was admitted to the Dooley Hospital for calcium and phosphorus metabolism determinations. The laboratory findings and metabolism experiments are reported in detail in another paper (Wampler and Forbes, 1933). The child was roughly in calcium equilibrium when the tests began; this was brought up to .57 gms. daily retention on medication and diet. Roentgenograms showed some improvement in the calcium in the bones after two or more months with the retention. The child's

strength increased and there was general improvement, but the weight still fluctuated, being as much as two pounds in twenty-four hours on one occasion.

There is a strong suspicion that there is an endocrine element here in addition to the steatorrhea. The X-ray of the sella turcica showed it largely closed over, and there were some symptoms of a para-thyroid condition.

Summary

A case of celiac disease extending over eight years is reported which showed bone changes resembling those seen in more severe cases of osteomalacia.

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PAROXYSMAL HEMOGLOBINURIA OF SYPHILITIC ORIGIN.*

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History of Syphilis

There are two opposing views concerning the antiquity of syphilis. One is that the disease was introduced into the civilized world in relatively recent times by the returning sailors of Columbus, and that it was spread throughout Italy in 1493 by the soldiers of Charles VIII. It was about this time that the disease became a great scourge and spread rapidly over Europe.

The other view is that syphilis is a very ancient disease which has existed among civilized people since the very dawn of history. Early Egyptian and Assyrian inscriptions, as well as the bony changes found in mummies, are cited as documents in evidence. It is even said that Chinese medical treaties written more than twenty centuries before the Christian era contain direct reference to the disease. According to this view, the great epidemics of syphilis which occurred during the Middle Ages were mere recrudescences of an already endemic disease. The latter view seems the more probable.

The syphilis of the Middle Ages was virulent and widespread. Its rapid propagation at this time was effected by various modes of personal contact, and its venereal origin was not generally recognized. Later syphilis came to be regarded solely as a venereal disease; but the hard chancre, soft chancre or chancroid, and gonorrhea were not distinguished for a long time. They were finally differentiated by Ricord about the middle of the nineteenth century.

Then there came the middle of the nineteenth century when syphilis was studied largely in its dermatological aspects. Although the dermatologists of that day, Ricord, Hebra, Fournier, and others, understood the general character of the infection, the graphic appearance on the skin and mucous membranes seemed in their minds to dominate the clinical picture and to give the disease special dermatological interest.

In the early part of the twentieth century the conception of syphilis was greatly broadened and the disease gradually assumed a different clinical aspect. Experimental study was facilitated by the discovery of Metchnikoff and Roux that syphilis can be transmitted by inoculation to the lower animals. In 1905 Schaudinn made the epoch making discovery of the causative agent, the Treponema pallidum. About a year later Wassermann devised the biological reaction of great diagnostic value to which his name has been given. In 1910, Ehrlich, in his studies in chemotherapy, succeeded in producing the highly potent remedy salvarsan. Finally, in 1913, the much discussed question of parasyphilitic disease was settled by Noguchi when he demonstrated the constant presence of the Treponema in the brain of paretics. As the result of these discoveries, syphilis is today considered neither a venereal disease nor a skin disease, but a general disease with protean manifestations.

*Read before the Northern Neck Medical Association, Heathsville, Va., May 25, 1933.

Syphilis, as we are learning almost daily, manifests itself in many different ways, and as Sir William Osler once said, "know syphilis in all of its manifestations and all other things will be added unto you," the veracity of which assertion certainly cannot be doubted.

Probably one of the most peculiar manifestations of syphilis and certainly one of the most rare is that of paroxysmal hemoglobinuria.

Paroxysmal hemoglobinuria is usually defined as a syndrome or condition of late acquired or congenital syphilis, manifesting itself by recurring paroxysms of hemoglobinuria and by characteristic symptoms. The blood of patients who suffer from this condition contain in the latent form a specific hemolysin which becomes active when the blood is chilled and which produces the paroxysm. The condition may occur at any age, but it is rarely observed in patients more than fifty years old. It is as common in children as in adults, the majority of patients being male.

The autohemolysin may, when the patient is exposed to cold, hemolyze enough erythrocytes to produce transient hemoglobinemia, hemoglobinuria, secondary anemia, evidence of altered bile metabolism and a typical group of symptoms.

This condition, paroxysmal hemoglobinuria, should not be confused with hematuria produced by drugs, sulphonal or trional poisoning, nor hemoglobinuria from other causes, such as malaria, bacillary fever, septicemia, Raynaud's disease, Winckle's epidemic hemoglobinuria of the newborn, and various hemolytic poisons, particularly carbon monoxide, carbon bisulphide and arseniureted hydrogen.

This rare disease, paroxysmal hemoglobinuria, is characterized by the occurrence of paroxysm of hemoglobinemia and hemoglobinuria, often following exposure to cold or occasionally after exertion, in a patient with syphilis. Constitutional symptoms, such as a chill, fever, malaise, headache and aching pains in the back, abdomen or legs may or may not accompany the paroxysm.

The blood serum of these sensitive individuals contains an autohemolysin which unites with the erythrocytes at low temperature, and, when the blood is warmed, intravascular hemolysis occurs and free hemoglobin is liberated into the circulation. If the destruction of the erythrocytes has been sufficient, hemoglobinuria occurs, the urine becomes tinged with color varying from a like pink to a dark Burgundy red, with methemoglobin, oxyhemoglobin and hematin. Occasionally the urinary findings indicate the occurrence of an acute renal tubular degeneration. The urine between the attacks is normal; during the paroxysms, deep red, urine, due to methemoglobin, oxyhemoglobin and partly to hematin, is the characteristic finding.

In most cases a few casts, erythrocytes and variable amounts of albumin are found. The erythrocytes decrease rapidly during a paroxysm; in severe attacks they may be reduced as much as one million per c.m. of blood in a few hours. Repeated attacks may produce secondary anemia.

The autohemolysin is the thing which differentiates paroxysmal hemoglobinuria from all other diseases. It differs from all other known hemolytic agencies.

The most acceptable theory explaining its presence is that the autohemolysin in one of the anti-bodies or immune bodies produced in response to the antigen liberated from the spirochetes of syphilitic organs or both. The autohemolysin is found only in syphilitics.

Urinary findings are frequency of urination, dyspnea, oliguria, or palpitation.

It has been shown that approximately one-sixtieth of all the erythrocytes of the blood must be hemolyzed to raise the plasma hemoglobin to the renal threshold for hemoglobin excretion.

The symptoms are rare. They appear following exposure to cold of varying degrees, especially if the patient is tired and somewhat exhausted. The typical systemic symptoms are chilliness, headache, malaise, and aching pains in the back, legs or abdomen; more rarely dizziness, visual disturbances, nausea and a desire to yawn are noted. The paroxysm is usually ushered in with a chill, the temperature rises to perhaps 101-103 degrees F., and the systolic and diastolic blood pressure may be elevated 50-100 m.m. of Hg. After probably thirty minutes there will be an urgent desire to urinate. The urine, which contains free hemoglobin, will be dark red, reddish brown, or almost black. As a rule it is because of the dark urine that the patient consults the physician. The paroxysm usually lasts from two to four hours, though occasionally for twenty-four hours or longer. The patient will ordinarily void the dark urine in the first two specimens after the chill. The

temperature falls, recovery is complete, and there are no symptoms between attacks.

The autohemolysin responsible for paroxysmal hemoglobinuria may be demonstrated by a process known as the Landsteiner reaction. In its best form, the reaction consists in chilling to zero C. for ten minutes the patient's serum and a suspension of his own washed erythrocytes to which fresh complement has been added, and then warming them to 37 degrees C., when hemolysis occurs. The above reaction is brought about by a union of the hemolysin and erythrocytes at low temperature. The blood serum of normal individuals does not contain these hemolysins.

So far as reported, cases show there is no evidence that the paroxysmal hemoglobinuria occurs in other than syphilitic patients of long standing, and while the condition occurs at times in warm weather, it occurs far more commonly in cold weather following a chill.

Thurman reported a case of artificially produced paroxysmal hemoglobinuria by immersing the feet of a syphilitic patient in ice cold water for thirty minutes, after which the patient is put to bed and kept warm; shortly afterwards she had a chill, passed bloody colored urine which, before chilling of her feet, was perfectly normal.

Paroxysmal hemoglobinuria, as stated in the beginning of this paper, is a rare and rather strange manifestation of syphilis. However, it has been known since 1794, when Stewart, at Archangel, observed the condition. A similar case was discussed by Royer in his Treatise on Diseases of the Kidneys in 1841. Dressler, in 1854, in his monogram on Intermittent Albuminuria and Chromaturia, first gave a satisfactory account of the condition.

In 1885, Ehrlich made some study of the condition and showed that when a ligatured finger of a hemoglobinuric patient was immersed in ice cold water intense hemolysis occurred below the ligature in the finger.

Most authors agree that the presence of a special autolysin in the blood serum of patients with paroxysmal hemoglobinuria is the result of the action of the syphilitic virus.

Blumer, in his recently issued textbook on Bedside Diagnosis, said plainly, it is now known that this disease, paroxysmal hemoglobinuria, is due to syphilis.

As early as 1874 it was observed that in cases of syphilis the erythrocytes diminished and the leukocytes increased. Frequently with a sudden drop in the total white cell count and the percentage of polymorphonuclear cells with a subsequent leukocytosis, there is an elevation of blood pressure and a rise in temperature. Intensive anti-luetic treatment may be expected to cause cessation of the symptoms, disappearance of the auto-hemolysins, and a conversion of a positive to a negative Wassermann.

Later investigators, such as Konried, found that the hemoglobin content of the corpuscle was attacked by the syphilitic virus. Marri was one of the first to connect syphilis clearly with paroxysmal hemoglobinuria and to institute antisyphilitic treatment.

No evidence of a spontaneous cure can be found in the literature, but under antisyphilitic treatment the symptoms of the disease disappear. A hemolysin is present in the blood plasma of these individuals, which is activated by a change in temperature, particularly by exposure to cold and then to room temperature. A hemoglobinemia is produced in the patient and the hemoglobin passes through the kidneys, giving to the urine the reddish transparent color characteristic of hemoglobinuria.

As stated in the beginning of this paper, the condition, paroxysmal hemoglobinuria, is extremely rare. In 1928 Mackenzie reviewed the literature on the subject, stating there had been less than three hundred cases reported. Indications of the rarity of this unusual manifestation of syphilis is further borne out by Pilot and Friedmann, who reviewed the case records of 156,000 syphilitic patients treated at the Massachusetts General Hospital during the past thirty years, and reported that they found only nine cases of paroxysmal hemoglobinuria. Likewise, among 74,186 consecutive admissions at the Peter Bent Brigham Hospital there have been but three cases of this disease. Of 3,368 syphilitic patients treated at the Boston City Hospital, only one case of paroxysmal hemoglobinuria was found, this case being the first in which the condition was recognized in twenty years.

Prognosis.—Paroxysmal hemoglobinuria is not considered very fatal, although there is a record of one death during a paroxysm. The attacks may be sufficiently frequent and severe to produce marked clinical anemia.

Antisyphilitic treatment will generally control the attacks. There have been no authenticated spontaneous cures.

Treatment.—It is generally accepted that a cure can be obtained by vigorous and prolonged antisyphilitic therapy with arsphenamine, iodides, mercury and bismuth.

Diagnosis.—1. A history of passing a dark red urine following exposure to cold, together with the characteristic prodromal paroxysms and post-paroxysmal prodromal symptoms.

2. Demonstration of free hemoglobin in the urine during the attacks.

3. Absence of hemoglobinuria between attacks.

4. A positive Wassermann or other diagnostic evidence of late syphilis.

The case which I wish to report in this paper was first seen in my office May 16, 1932.

Patient, a white male, age 38, occupation, a seaman, weighing 165 pounds, apparently robust and hearty. Chief complaint was (1) chilly sensations after exposure to severe cold, (2) palpitation of heart, (3) passing bloody urine upon exposure to severe cold.

Past History: Has had the usual infectious diseases of childhood without any known complications. General health is said to have been good. History of sore on penis fifteen years ago.

Present Illness: Patient states that for the past four or five years he has been particularly susceptible to severe cold weather, in spite of the fact that he wears quite heavy clothing. Quite often after being exposed to severe cold weather he has a chill; within a few hours he has an urgent desire to urinate, during which time he voids dark reddish colored urine for several subsequent urinations, after which the urine becomes clear. He stated that this would not occur again until he is exposed to severe cold; then he goes through the same experience. According to the statement of the patient, the attacks have gotten progressively worse, but at no time has he had one of them during warm weather.

Patient gave history of having had a sore on his penis about fifteen years ago, at which time he consulted a physician who examined him, took a Wassermann, and informed him that he had syphilis. Following this, he received several injections of what he thought was antiluetic treatment in the vein, during which time the ulcer cleared up on his penis. Shortly thereafter he was told by the physician that he was well and need not take any further treatment.

At no time has the patient, according to his statement, had any skin lesions, but he says he has had vague somatic pains in his legs and palpitation of the heart quite frequently; he has also complained quite frequently of being nervous.

There is no family history of syphilis, and both mother and father are living and well. Patient is the only child of the parents, and has been married about eleven years. His wife has had no pregnancies, or abortions. She has persistently maintained a negative Wassermann and enjoyed good health.

Physical Examination: Reveals a well nourished and developed white male patient about 40 years old.

Head and neck: Essentially negative.

Thorax: Well developed, expansion free and equal, no rales and no abnormal breath sounds.

Heart: Practically normal in size and position; blood pressure 135/90; no murmurs or abnormal sounds elicited. Aortic second is slightly accentuated; apex beat 80 per minute.

Abdomen: Grossly—negative.

Extremities: Show no limitation of motion, or abnormalities.

Reflexes: Deep reflexes are rather sluggish; negative Babinski and Romberg. Pupils show fair accomodation to light and distance.

Urinalysis: Negative.

Blood: R. B. C. 4,500,000, W. B. C. 9,000, hemoglobin 80 per cent, Wassermann 4 plus.

Upon repeated examinations of the urine there have been no pathological findings only in the specimens taken during or immediately after a paroxysm. These specimens have generally shown a few R. B. C., variable amounts of albumin, free hemoglobin and some few pus cells, the urine being of a dark reddish color.

On July 6, 1932, this patient was put on antisyphilitic treatment, weekly doses of neoarsphenamine in .3 gram doses, increased gradually to .6 grams. After ten injections a Wassermann was taken and reported complete fixation. He was then put on mixed treatment for one month, after which he was put on Iodobismitol for ten injections, at the end of which time a second Wassermann was taken and reported 4 plus. On December 7th, he was started on a second series of Iodobismitol, alternating every third injection with neoarsphenamine. Third Wassermann was taken with complete fixation February 7th, but up until this time the patient had not had any paroxysms, though he had been exposed to some very cold weather.

On March 1st, he was started on a second series of neoarsphenamine, one day previous to which he had had a paroxysm and passed the bloody colored urine—with the characteristic findings, free hemoglobin, few R. B. C. and a considerable amount of albumin. Blood pressure at this time was 100/60; R. B. C. was 3,200,000, white count 7,500. Ten injections of neoarsphenamine were given during this series and he still maintains a 4 plus Wassermann. However, he had only one paroxysm during the past winter, previous to which he had been having several severe ones each winter.

On May 8th, he was started on a second series of Iodobismitol, alternating with neoarsphenamine and potassium iodide by mouth. He is under treatment at the present time.

Since the beginning of treatment about one year ago the patient has had sixteen injections of neoarsphenamine and twenty-four of Iodobismitol, and still has a 4 plus Wassermann. However, his clinical symptoms have practically cleared up, and says he feels fine. Having had only one paroxysm during the past winter, he expects to continue his treatment.

We have reported here what I believe to be a case of paroxysmal hemoglobinuria, based on the following facts and findings:

1. A history of passing a dark red urine following exposure to cold, together with the characteristic prodromal paroxysms and post-paroxysmal prodromal symptoms.
2. Demonstration of free hemoglobin in the urine during the attacks.
3. Absence of hemoglobinuria between attacks.
4. A positive Wassermann, which has remained positive in spite of the fact that he has received rather vigorous antisyphilitic therapy.

UNDULANT FEVER.*

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Undulant fever is a specific infectious disease caused by a member of the bacterial genus, Brucella. In this section of the country the abortus variety is the causative organism in the great majority of the cases. The disease has many synonyms of which Malta fever is the best known. Under the latter name it has been recognized for many years about the Mediterranean basin, and there is caused by the Melitensis variety of Brucella which has been proved to be transmitted by the drinking of raw goat's milk. In 1905, Craig reported a case of Malta fever in Washington, D. C., the origin of which was not known. About 1911, a number of cases were reported from the goat raising section of southwestern United States. In 1924, Keefer described in detail a case originating in Maryland and due to the abortus variety of the organism. Since that time reports of cases have come from all sections of the United States, from Canada and many foreign countries.

In Virginia, Dr. J. Powell Williams, of Richmond positively identified two cases of undulant fever in 1927. The Virginia State Board of Health had three proven cases reported in 1928, and since that time the incidence has gradually increased to thirty-seven in 1932. The cases have been more numerous where the dairy population is heavy, and rare through Southside Virginia where large herds are uncommon. The largest incidence has been in the valley and northern sections of the state.

The Brucella abortus organism is the common cause of infectious abortion in cattle, and it is probable that human beings contract the disease by drinking the infected milk of these animals or by coming in contact with their flesh or their excreta. The milk transmission is doubted by some writers who cite the fact that a large number of individuals drink milk containing the organisms without becoming

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infected. Furthermore, virulent organisms have been added to milk which was consumed by volunteers without resulting in the development of the disease. All the members of the families of two of our patients used the same milk but did not become ill. However, the evidence that Brucella melitensis is transmitted by goat's milk is thoroughly convincing, and it would seem that cow's milk is a logical vehicle for the abortus variety. The explanation must lie in the virulence of the organism ingested and the susceptibility of the individual.

In addition to cattle, the disease may be transmitted by other animals, notably swine. By special agglutination technique, bovine and porcine strains of the organism may be differentiated, and there is some suggestion in the literature that the latter type is more virulent for human beings. The probable portal of entry is through the gastro-intestinal tract, although entrance through a cut in the skin or possibly the unbroken skin cannot be denied.

The following cases have come under our observation:

Case 1.—Mr. O., age 34. His home is in Richmond, but he travels over the entire state as a salesman and drinks considerable milk. He was referred by his physician for diagnostic study October 31, 1932. His past history was unimportant. His present illness began abruptly with what was diagnosed influenza on January 29, 1932. He had fever for about a week, associated with severe sweats. His fever cleared up and he returned to work but continued to have night sweats for at least three weeks. These then ceased but he felt weak and listless. Two months later his fever and sweats returned, so that he again went to bed for two weeks. At this time he was carefully studied and no cause could be found for his symptoms. He weighed 200 pounds, hb. 83 per cent, wbc. 6,700, with slight relative lymphocytosis. His periods of fever and sweats returned at long intervals until he was seen by us.

At the time of examination he weighed 190 pounds and did not appear ill. The only physical abnormality was a slightly enlarged spleen. Blood showed hb. 74 per cent, erythrocytes 3,800,000, leucocytes 6,600, with 52 per cent lymphocytes in the differential picture.

A specimen of blood sent to the laboratory of the State Board of Health showed agglutination of Brucella abortus in dilutions up to 1-160. Blood culture remained sterile until discarded after fourteen days.

He was given an iron preparation which caused a prompt rise in his hemoglobin but he had at intervals periods of mild fever and sweating. On November 28, 1932, a stock undulant fever vaccine became available and he was given this in increasing dosage over a period of six weeks. At this time his agglutination titer was 1-40. On February 7, 1933, he expressed himself as feeling well and has remained so.

Case 2.—Mr. H., age 30. He lives just east of Richmond and has been accustomed to drinking raw milk from a local dairy. When first seen April 17, 1933, he stated that during January, 1933, he felt listless and badly. About February 1st, he developed frequent chills, fever and sweats extending over a period of several weeks. He then improved until a relapse occurred about the first of April. When seen April 17th, he was having fever as high as 105°, chills and sweats. He complained of headache and backache. His spleen was palpable and specimen of blood submitted to the State Laboratory showed agglutination of Brucella abortus in dilutions up to 1-320. The blood culture was positive for this organism. He was given five injections of stock undulant fever vaccine and by May 8th his symptoms subsided. A milder relapse occurred about the middle of May and during this he was given six doses of autogenous vaccine. Since June 4th he has remained well. Blood submitted for agglutination test September 9th was positive in dilutions up to 1-80.

Case 3.—Mrs. B., age 31. She lives four miles east of Richmond and used raw milk from a local dairy. Her onset was rather sudden with a chill on March 25, 1933. She had a chill every other day for ten days, each time with fever and sweating. Her chills then became irregular in time. On April 3rd, leucocytes 5,400, differential showed 50 per cent lymphocytes. Malarial smear negative. Her blood serum agglutinated Brucella abortus in dilutions up to 1-320. She then ran an irregular course with fever for several days and then short periods of improvement. Was given six doses of stock undulant fever vaccine, and then three small doses of vaccine from Case 2 with marked local and general reactions. On June 10th, she developed pain and sore-

ness in the lower right abdomen, suggesting local inflammation about the appendix, right tube or ovary, and was admitted to the Johnston-Willis Hospital for observation. Blood showed hb. 70 per cent, erythrocytes 4,320,000, leucocytes 4,000, polymorphonuclears 53 per cent, lymphocytes 47 per cent. Blood serum agglutinated Brucella abortus in dilutions up to 1-320. The condition in her abdomen subsided and she went home June 16th. Since then she has gradually improved and about August 1st considered herself well. On September 6th, patient's blood serum showed negative agglutination with Brucella abortus.

The four most striking clinical features of the disease are the indefinite character of the symptoms, the undulant type of fever curve which, however, is not constant, the severe sweats and the peculiar lack of discomfort on the part of the patient even though the fever is high.

The date of onset is frequently indefinite, with gradually increasing malaise, headache, sweating and rise of temperature. On the other hand, the onset may be abrupt and characterized by frequent chills, high fever and profuse sweats. This period of high fever may last a few days or weeks, then subside to recur in a few days or weeks. The fever curve has been likened to that of typhoid fever with several relapses. The appearance of the patient is quite in contrast, however, to the typhoid state. One of our patients while being observed in the hospital was quite vivacious, would entertain her friends or read a novel while her fever was around 102°.

As time passes each relapse becomes less severe until the patient recovers. The average duration is about three months, although it has been described as lasting from a few weeks to two years or more. Cases have also been reported that have never been sufficiently ill to require bed treatment and are classed as ambulatory. The mortality is given as from 2 to 13 per cent. The cases reported in Virginia have shown an 8 per cent mortality.

About the only physical changes found in these cases are an enlarged spleen in about one-third, a moderate loss of weight, and at times a mild bronchitis. Complications are rare. Involvement of the scrotal contents in the male and the pelvic organs in the female have been described. Case 3 above had a short attack suggesting inflammation about the right tube or ovary. Occasionally a definite lymphadenitis occurs. Arthritis has been described by some authors as a common symptom or complication. In Hardy's report of 125 cases, joint pains were fairly common but true arthritis was unusual. None of our cases had more than occasional arthralgia.

Laboratory examinations show a slight anemia, usually leucopenia with a tendency to relative lymphocytosis, and, as diagnostic findings, a positive blood culture and a positive agglutination test, using patient's blood serum. No criterion for level of agglutination in dilutions can be established. At the Hygienic Laboratory at Washington, agglutination in 1:80 dilution, or higher, is considered indicative of undulant fever in the presence of clinical symptoms, but cases have been reported showing positive blood cultures with much lower agglutination titers. The agglutinins usually persist in the patient's blood for some time after recovery, but it has not been established as to whether one attack confers immunity.

In the few cases where post-mortem examinations have been made, pathological findings have been indefinite. The liver and spleen may be enlarged, there is usually some congestion of the lung bases, scattered lymph nodes may be inflamed, and local involvement in the heart and meninges has been demonstrated. In cows there is inflammation of the pregnant uterus and the foetal membranes, and microscopic evidence of inflammation in the mammary glands.

The prognosis as regards life is good, but the duration of the infection is always uncertain and cannot be predicted.

The prophylaxis of undulant fever is important. The ideal would be the elimination of all animals shown to have a positive blood agglutination test, but this is not as yet practicable. Pasteurization of milk from all animals not proven free of infection should be done. It will still be difficult, however, to combat the contact infection of meat handlers.

Curative therapy is quite unsatisfactory. Rest in bed during the febrile periods, a highly nourishing diet to sustain the patient, and remedies for symptoms as they arise are indicated. Vaccines, both stock and autogenous, have been used with uncertain results. One observer has remarked that in the presence of a septicemia due to Brucella organisms he could not see the logic of inject-

ing dead ones to act as antigen. One of our cases showed a distinct drop in agglutination titer after taking the stock vaccine. Intravenous injections of mercurochrome and other antiseptics have been tried with apparently brilliant results in the hands of some, and none in others. We debated the question of giving transfusion of blood or convalescent serum from Case 1 to Case 3, but could not get agreement from the two parties concerned. The very nature of undulant fever makes evaluation of treatment extremely difficult, since the relapses differ in severity and the duration is so variable. It is a disease where the last doctor in the case so often gets credit by the laity for the cure of the condition. If we are only "undulant fever conscious," we will make more early diagnoses and can relieve uncertainty and mental distress on the part of the patients and their families.

MODERN METHODS OF BIRTH CONTROL.*

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The opportunity to present this very important and far reaching subject to this Society is greatly appreciated and it is hoped that the information given will clarify certain phases and prove of value as well.

The subject as a whole was read before the Medical Society of Virginia at Roanoke in October, 1931. At the meeting of this Society held at Lawrenceville, Va., in February, 1932, a paper was read on the "Indications for Contraception." Now we are to consider the modern methods of birth control. After all, this is what we are most interested in, yet it seems that it is the least understood. It is difficult to proceed with any phase of birth control without a brief amplification at least. Several of the very important topics connected with this subject will have to be omitted and others can only be mentioned.

The term "birth control," as commonly called, is otherwise known as contraception, prevenception, prophylaxis of conception, etc. The general meaning as used by its advocates does not necessarily imply "prevention"; on the other hand, it is the proper spacing or the conscious control of the birth-rate by tested, modern, scientific measures. It is desirous that families be as large as possible within reasonable limits of health, financies, eugenical fitness, and other considerations. The idea, then, is certainly not one of preventing families.

Contraception has an entirely different meaning from abortion. It would seem almost ridiculous to have to stress this distinction, and, after all, there is some excuse for the laity in confusing the terms, but not for the medical profession. Personal knowledge, however, has shown that we do confuse the terms. Abortion destroys the already fertilized ovum or interferes with its development, while contraception prevents the union of the two cells, thereby preventing conception from taking place.

Contraception is a medical problem, first and foremost, and it is the doctors who should use it. It is the doctors who must eliminate the unfit and build a wise and vigorous race. The lay leaders of this now world-wide movement are most anxious that the medical profession handle the problem, even though we have watched from the side-line in the past as they have carried on and developed a branch of preventive medicine destined to become a part of our national health program and dealing with vital problems and preventing unnecessary waste of human life and energy. We have marked time long enough, but now we must begin to take a hand and bring this weapon of great power where it rightfully belongs—to the medical profession.

Whatever you may think of birth control, it is not difficult to enumerate the conditions that demand this help, for they are to be found in the experience of all medical men regardless of type of practice. Are we to allow this country to continue to lose 20,000 mothers and 150,000 infants each year, a loss directly or indirectly caused by ignorance of birth control? Are we to stand by with folded arms with knowledge of the fact that there has been a notorious increase in the number of abortions in this country, estimated conservatively to be over a million a year, and resulting in a large percentage of deaths? We all know of men

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long out of work, a wife and several children to support, probably babies to arrive or just arrived. If the so-called "white collar" class finds it necessary, because of economic conditions and a desire to maintain a high standard of living, to limit their families, what must be the condition existing among the unskilled laborers? Reliable contraceptive information should be made easily accessible to these unfortunates in the interest of their families and society. Are we apathetic because we are afraid of the words "social and economic grounds" for birth control advice? The sterilization laws now in effect in the several states are simply the application of humane and intelligent control to human breeding which is destined to bring about a marked improvement in the race from a eugenical standpoint at least. Have you stopped to consider a study of the situation in the United States which revealed the fact that the feebleminded and generally biologically unfit class are increasing about three times as fast as the best human stock? Are we headed for universal insanity? This condition is a most serious threat to mankind and immediate action is necessary. Universal sterilization (permanent protection) of the feebleminded, epileptic, and the like should be made a law and thus check this deplorable condition. Instead of an immense life of low type, would you not prefer half that amount of a higher type? Surely it cannot be numbers that you really want. Why is it necessary that the human race increase rapidly, anyhow? Is China with its many millions any happier than little Holland? You have recently seen the course Japan was forced to follow because of its over-population. The same must inevitably happen to other countries under the same conditions. During pregnancy we do all we can to keep the woman in good health and condition in order that she may give birth to a healthy off-spring and to preserve her health; therefore, conversely, why should we not defer a pregnancy or control it when conditions are unfavorable for procreation Is not reliable contraceptive advice more to be desired than infanticides, abortions and the other evils that exist due to ignorance of birth control? Women should be more than just a breeder of children. Only the capitalist, with his hunger for profits, and the war-lord, with his hunger for man power, now cry out: "Give us more people, for upon their backs we ride to glory."

It is an established proposition that all species of plant or animal life, if allowed to multiply unchecked, would in a relatively short time overrun the entire surface of the globe. This you well know and will perhaps recall, for examples, the eggs of a single codfish, the seed of a plant, or the possible multiplicity of off-springs resulting from mating a single pair of guinea pigs. This unhampered reproduction of species would soon consume the total quantity of matter contained in our solar system. In reality, of course, we know this does not take place, since nature has provided its forces of destruction to maintain a balance. The human race is also subject to this same law of multiplication. Populations have been known to double in twenty-five years, and under favorable conditions may do so in half that time. Population pressure and the counter pressure of antagonistic forces are requisite to maintain a balance of our population. These forces consist of human destruction by wars, epidemics, periodical famines, floods, etc. Death, it might be said was an adaptation advantageous to the race, and might be regarded as a provision against over-population. With the gradual elimination and improvement in these factors, the pressure of population has shown a corresponding increase We must here take into consideration perhaps the most important check of all on over-population, and that is: the conscious effort to keep the number of newly born individuals within tolerable limits. The earliest method resorted to by primitive peoples was, naturally enough, infanticide, or the killing of infants at birth or shortly afterwards. We find this method to some extent still prevailing in many parts of the globe. It seemed not only a convenient means of regulating the growth of population, but also to determine its quality, for usually only the weaker infants were put to death. Partly supplanting infanticide, there existed licentiousness, homosexuality, and prostitution.

It is not known exactly just how long infanticide continued before it dawned upon the primitive mind that it could be avoided by destroying the infant's life while still in utero. Infanticide was henceforth gradually replaced by artificial abortion. At first, this was resorted to during the later stages of pregnancy, and when man began to recognize early pregnancy efforts were made to interrupt it. Although abortion was better than infanticide, the former carried with it a waste of human

life, suffering, and economic losses. The substitution of abortion for infanticide, however, must be considered chronologically and ethically a step in advance. As time went on and man desired to prevent pregnancy altogether, humanity finally witnessed a new departure in dealing with over-population, namely, contraception. This was known and occasionally employed in antiquity, as may be gathered by reading the 38th chapter of Genesis, 8th, 9th, and 10th verses. In modern terms, Onan sought to guard against conception by practicing coitus interruptus. Erroneously, however, his name has become associated with masturbation ("onanism"). The real movement for control of procreation may be said to date from Malthus' famous "Essay on Population" (1798). The remedy proposed was "self-control" or abstinence and there were many followers. This method was obviously bound to fail in time because of the powerful influence of the reproductive instinct. Complete restraint among married couples living together is entirely unnatural.

With the justified need of a more rational means of control desired, laboratory and clinical research really got under way. Although the ideal method has not been reached, the methods commonly employed at present in the various birth control clinics here and abroad are vastly superior to those frequently used by the laity and often advised by the profession. The Russians have been experimenting with a collapsible ball, but they are apparently not having the success anticipated. The serum method tested at the University of Edinburgh will take years to demonstrate its value as a contraceptive. For protection prolonged over weeks or months, arrest of manufacture of eggs or sperms is being studied, the chief means being heat to the testicles, hormones, spermatoxins, or X-ray. For permanent protection, the seminal duct above the testicle is tied harmlessly under local anesthesia, or the oviduct is closed; also sterilization by X-ray is under continued test.

The contraceptive methods usually employed today may be broadly divided into two classes: chemical and mechanical. To the former belong such methods as douches, suppositories, tablets, powders, and jellies; to the latter, condoms, sponges, tampons, intra-uterine pessaries, and in a sense coitus interruptus.

Of the chemical methods most commonly employed are douches and suppositories. Neither have proven satisfactory contraceptive measures. With the douche, various clinics report only 20 per cent success and with suppositories, 40 per cent. If chemical contraceptives are to be used, they can be employed to a greater advantage and with much greater chances of success in the form of jellies. The jelly that is most frequently used is, perhaps, the lactic acid form and results have shown it to be successful in about 80 per cent of the cases.

The most important of the mechanical methods are the intra-uterine pessary, the condom, and the occlusive pessaries. Coitus interruptus may be included in this group. Suffice it to say that the intra-uterine pessary can only be condemned. It is neither reliable nor physiologically sound. Coitus interruptus also is not an efficient method; yet there is world-wide continuance in this practice. It is not reliable and is physiologically and psychologically unsound. Many urologists and sexologists claim that coitus interruptus leads to various urological, sexual, and psychic disturbances. The condom is the most commonly employed contraceptive method of the mechanical devices. It maintains its place in Europe and America as the device which is the chief reliance of the public and the one which stands first in availability. The fifteen manufacturers in this country are reported to produce 1,400,000 a day. When carefully tested and properly applied, the condom is a reliable means of contraception, yet we find frequent failures with its use. It might surprise you to know that recent reports from the various clinics show that the success obtained with its use gave only 30 per cent protection. As an additional precaution in using the condum it is advisable to apply a small amount of an approved antiseptic jelly on the outside of the sheath and inside at the bottom. Aside from the question of reliability, however, there are objections to the use of the condom on physiologic and psychologic grounds. Any one doing contraceptive work will soon find these objections sustained.

The occlusive pessary method has been in use abroad, especially in Holland and England for many years, and has come into general use in America during the past few years. There are two types of occlusive pessaries, the cervical and the vaginal. The cervical are

designed to fit snugly around the cervix. To this group belong the popularly used Mizpah pessary, the French pessary, and the Pro-race or Check pessary of Marie Stopes. In selected cases very satisfactory results have been obtained with these pessaries. The chief objections to them, however, are that they can be adjusted only with great difficulty, and that many women cannot acquire the necessary skill to do so. The vaginal diaphragm occlusive pessary has proven to be more satisfactory than any of those mentioned. This pessary consists of a rubber dome with a covered metal spring around its circumference and resembles half of a tennis ball. It is designed to fit diagonally across the vault of the vagina from a point in the posterior cul-de-sac to a point behind the symphysis pubis and makes gentle but firm pressure against the vaginal walls. It serves as a barrier between the sperms and the os uteri yet there is no attempt to cap the cervix. There are several varieties of these pessaries, differing in the kind of rubber and type of spring used. They may be obtained in sizes from 50 to 105 mm. in diameter with a 5 mm. difference in each size. The fitting set, composed of sizes 65, 70, 75, and 80 is used by the physician to determine the size required in each case and the largest pessary that can be comfortably used should be chosen. It is obvious, therefore, that each patient must receive a thorough gynecological examination. Certain pathological conditions may be present and thus interfere with a proper fitting. These conditions should be corrected if possible. A possible pregnancy should always be kept in mind and if in doubt, especially in a case where the period is overdue, it is well to explain the situation to the patient so that the blame will not be laid to the pessary if a previous early pregnancy really existed. While some women are claiming good results with the use of the pessary alone, it is advisable that it be used in conjunction with the jelly. This combined method is the one of choice and is giving 96 per cent success throughout the various clinics. In private practice there is no reason why a higher percentage should not be obtained approximating 100 per cent. The method is a temporary one, the pessary being removed within a few hours after intercourse. The patient is taught within a few minutes at the office how to insert and remove the pessary. This method is not only reliable but physiologically permissible, psychologically satisfactory, requires the least preparation commensurate with complete protection, is the simplest devised giving adequate protection, and is absolutely harmless. No one has yet been able to bring forward any clinical evidence that this type of pessary, properly fitted by a physician, correctly used and cared for, has ever injured any woman in any respect whatsoever.

For the majority of patients the vaginal diaphragm pessary is applicable. Patients in whom it cannot be effectively used are those in which the perineum is greatly relaxed, those who are obese and have short fingers, thereby making insertion difficult, and in newly married women during the first months of marriage. In those cases with cystocele or prolapse a special shaped pessary (Matrisalus) may be obtained. In other cases unsuited for a pessary it is necessary that the next best method be chosen after a careful consideration.

It is hoped and urged that physicians will continue to acquire and discuss scientific, effective, contraceptive methods, so that they will be in a position to really consider the problems presented to them as they would any other medical condition. Do not tell the woman with a dangerous heart lesion or a mother exhausted and weakened by repeated pregnancies, nursings, etc., that under no circumstances must she become pregnant,—and then refuse or fail to give adequate preventive advice. How can a physician excuse himself for neglect of ordinary health protection? Motherhood is such a beautiful, noble, and worthy undertaking that it should be voluntary and intelligent, and not accidental and promiscuous regardless of conditions or the evil results that might follow.

It is further urged that physicians aid the National Committee on Federal Legislation for Birth Control to abolish or amend the antiquated Federal Laws that still exist excluding supplies and medical literature relating to birth control from the United States mails, by giving their individual support and conveying this matter to their medical societies for consideration.

101 *Liberty Street.*

AN ANALYSIS OF 298 CASES OF OPERATIONS ON THE GALL-BLADDER WITH CONCLUSIONS AS TO OPERATIVE PROCEDURE.*

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The subject of this report is the surgical treatment of gall-bladder disease at the Bluefield Sanitarium covering the period from January 1, 1920, to May 1, 1933. The total number of cases was 298. Three operations in the series were excisions after drainage within the period covered, and the actual number of patients was 295.

The incidence of age and sex was not unusual. The youngest patient was a girl of eighteen, who had a calculous gall-bladder. The oldest was sixty-nine. Women constituted 81 per cent of the series and represented 243 cases. There were fifty-five cases in men, or 19 per cent. Seventy-eight per cent of the women had been pregnant.

Calculi were found in 219 cases and constituted 73 per cent. Associated stones in the common duct occurred fourteen times. In one case calculi were present in the common duct but absent in an old contracted gall-bladder, and in still another instance stones had reformed or been overlooked in the common duct where there had been gall-bladder excision elsewhere a year previously. Seventy-seven cases, or 26 per cent, were non-calculous gall-bladders.

The seventy-seven non-calculous gall-bladders have been further classified as to the degree and variety of pathology found. The pathology in twenty-four cases was thus designated as gross. The previous clinical evidence of disease was glaring. The gall-bladder which has been previously drained, regardless of what the provocation may have been, is a type of its own and accounted for six cases. Seven cases were designated "strawberry" gall-bladders. Eight cases had a clinical history of definite recurring attacks of biliary colic, but operation disclosed no departure from the normal. Thirty cases, which may be looked upon as the real problems of gall-bladder disease, had less certain clinical evidence of disease and revealed at operation rather ill-defined pathology. There were two cases of carcinoma, which are of statistical interest only.

In the non-calculous cases the appendix was noted as normal twenty-four times, diseased in twenty instances, and had been removed already in sixteen cases. There was no notation made about the appendix in the remaining seventeen cases. Routine removal was done forty-one times along with the operative treatment of the gall-bladder condition.

Cholecystectomy was the usual operative procedure and was done alone 272 times and combined with operations on the common duct in another ten cases, constituting, therefore, as a single and combined procedure, 95 per cent of surgical effort. Simple drainage was done ten times and "ideal" cholecystotomy once. Exploration and drainage of the peritoneal cavity was done in a single case for rupture of the gall-bladder and simple abdominal exploration for carcinoma twice. There was a single case of removal of stones from the common duct following a previous gall-bladder excision. One case of duct reconstruction was done successfully in a patient operated on by us prior to the period of this series and in whom the common duct was damaged in a simple excision of the gall-bladder, being followed by persisting fistula and intense jaundice whenever the fistulous tract became closed.

In the total series eight patients died, which represented an operative mortality of 2.7 per cent. Of late years we have made something of a fetish of making every gall-bladder operation an interval case, and in the early part of our series, when we were less well sold on the wisdom of this practice, we can account for two deaths which, under the present more conservative practice, may have been avoided. One of these cases, a woman weighing 180 pounds and age forty, was hardly over acute symptoms when excision of a calculous gall-bladder with edema of its walls was done. We were also enthusiastic at the time about excision and closure without a drain and this practice carried out in this case may have contributed to a fatal outcome. The patient died five days after operation probably from infection. A second case was that of a woman, fifty-two years old and also a stout stocky person, who had a calculous gall-bladder with

*Read before the Clinch Valley Medical Society at Tazewell, Va., September 30, 1933.

walls infiltrated to the thickness of from one-quarter to one-half inch. She was showing little tendency to clear up on a tentative plan and simple drainage was resorted to. The patient died of apparent shock two days after operation.

A third case with operation undertaken in an acute stage was that of a woman twenty years old with operation directed at a high acute appendix rather than a gall-bladder. A calculous acute gall-bladder was encountered. The patient did not do well from the start, developing intractable vomiting early, delirium and convulsions later, and died twelve days after operation. Clinically no chest complication developed, and a partial autopsy showed no peritonitis or any intra-abdominal condition to cause death.

The most interesting problem in the series of deaths was the case of a man forty-one years old who, with a previous history of mild gallstone colic, entered the hospital with an attack hanging on for twenty hours and with no signs of letting up. With a decided drop in blood pressure and other evidence of shock, exploration was made for an acute pancreatitis. Blood stained peritoneal fluid, areas of fat necrosis and a swollen and edematous pancreas confirmed the suspected diagnosis of acute pancreatitis. Numerous small punctures were made in the edematous pancreas, stones were removed from the gall-bladder, and a simple drainage was done. The patient made satisfactory progress for a couple of weeks and then developed a duodenal fistual from which he died forty-four days after the operation.

The four remaining deaths were of no special interest and followed frank post-operative pneumonias. In one instance the chest complication was obviously a metastatic septic process and there was an associated empyema. In another case autopsy showed an inflammatory mass about the pancreas head, which had been responsible for a severe post-operative jaundice, and the pneumonia, put down as one of the immediate causes of death, was probably a terminal event.

The more conservative practice in late years, already referred to, of tiding all cases over any acute process, has lengthened the stay in hospital, so that the average period of hospitalization in this series is twenty-two days. The pre-operative care took up an average of four days and the post-operative period was eighteen days. In 1923 we reported a series of 100 consecutive operations[1] in which the average hospitalization period was sixteen days. In the last five or six years we have handled a considerable number of patients on a periodic payment plan, and this fact has, no doubt, contributed to some extent to the longer stay of twenty-two days. The quiescent case now, after no other preparation than food and forced fluids for twenty-four hours, may submit readily to operation at once, but in any case with any sort of acute process, we have developed the practice of waiting almost indefinitely for a clear interval.

This review of 298 operations on the gall-bladder and its passages recalls many cases which evidently impressed at the time certain principles, although as individual cases they had been forgotten. The whole series has accentuated anew facts which should always be evident and has emphasized phases of surgical procedure which experience over many years has proved expedient.

Diagnosis must be reasonably accurate and not slip-shod. In the usual case this is always easy and certain. The attack of biliary colic is ordinarily so characteristic that a diagnostic problem does not exist. Acute processes produce local phenomena which have to be differentiated from a rupturing or ruptured peptic ulcer, sometimes an ill-placed and atypical acute appendix, rarely an acute pancreatitis, and now and then coronary heart disease expressing itself in abdominal angina. Common sense and average judgment are ordinarily adequate. In the more quiescent case with less glaring expression of disease, the Graham test of X-ray visualization of the gall-bladder is of undoubted value, although this diagnostic adjunct, itself not uniformly certain in the interpretation of a normal or a diseased gall-bladder, must be subsidiary to the long and recognized practice of the dependence upon a clinical story properly evaluated and objective evidence obtained by the examiner.

Operative findings ordinarily must represent pathology commensurate with the clinical picture, although now and then, as will be referred to later, surgical treatment must be directed purely at the relief of symptoms. We look upon the incidence of calculi in 73 per cent of the series as representing a rather conservative practice in the selection of all operative cases. While constituting by no means

the sole evidence of disease, the presence of stones makes its existence at least certain and not speculative. Although much depends on whether excision is practiced early or delayed to such a time when serious damage may have followed the extension of infection beyond the gall-bladder, adequate surgical treatment of calculous gall-bladder is most successful.

Logically not necessarily the case, but in practice usually so, any gross failure to obtain satisfactory end-results generally must seek an explanation in a more strict accounting of the pathology in the non-calculous case.

In twenty-four cases of the seventy-seven non-calculous gall-bladders in this series there was gross pathology of a kind as to leave no doubt about positive and serious disease. As stated before, the clinical evidence of disease was glaring. End-results are as satisfactory as in the calculous case.

Another group constituting undoubted pathology is made up of the cases, six non-calculous gall-bladders in this series, on whom cholecystostomy was practiced either as an operation of necessity or as a choice over removal. This type of case fortunately is becoming rare as conservative measures are practiced and as primary excision is more universally done. Mann, of the Mayo Clinic, not necessarily thinking of this phase of the problem, has suggested that the gall-bladder is a temperamental organ. Whatever operative finding may have prompted the primary operation of drainage, experience teaches pretty conclusively that trouble may follow, and where symptoms have recurred or developed after such operative effort, secondary excision usually effects a cure.

"Cholesterosis" or so-called "strawberry" gall-bladder makes up a widely varying proportion of non-calculous cases. Whether representing primary disease in the gall-bladder or a bi-product of metabolic change, excision in a definite case is fair assurance of a relief of symptoms. The fact must not be lost sight of that the normal mucous lining of the gall-bladder, easily by a stretch of imagination, may resemble somewhat the surface of a raspberry or strawberry and may account for a large incidence of this type of pathological gall-bladder in some series. In the seven cases listed as such in this series, the exposed mucous lining was required to possess the reddish base and the prominent papillae with tips containing whitish lipoid deposit to the extent that a non-medical person would recognize at once the resemblance to the surface of a ripe strawberry.

A group of eight cases with histories of clear-cut biliary colic but exhibiting no pathological change at operation emphasizes the importance, even though in rare instances, of operating for symptoms only. It is undoubtedly the experience in any clinic with close observation that now and then a patient presents the perfect clinical picture of gall-bladder disease as expressed by recurring attacks of colic, and yet at operation no departure from normal is found. It is fortunate that excision has become a practice in such cases, for a clinical cure is almost certain to follow. These interesting cases are classified at the Mayo Clinic as cholecystic disease, and Judd,[2] on the basis of certain experimental tests producing characteristic cholecystitis after the intraveous administration of certain chemicals. has suggested the causative factor as probably some change in blood chemistry the nature of which we are not aware. We are certainly not sure of what has taken place in these cases, and for the present surgery is purely an empirical practice.

Thirty cases out of the seventy-seven non-calculous gall-bladders, or 10 per cent of the whole series, revealed at operation rather poorly defined pathology. The changes are variously designated as pericystic adhesions, distended viscus emptying with difficulty, palpable glands; frequently changes in the liver were noted and designated as hepatitis. The clinical evidence of disease was usually as uncertain as the pathology revealed, and the patients complained of upper abdominal pain and rarely of colic. Invaliding digestive disturbance rather than the discomfort of outspoken pain brought them to surgical consultation. In a former report,[1] already referred to, on 100 consecutive cases of gall-bladder disease, twelve cases were of this type, and in a follow-up as to end-results, six were improved to some extent, and six others were probably worse off than before operation. Some of the cases are true cholecystitis and are undoubtedly benefited by removal of the gall-bladder. Still others represent changes in the liver, primary or secondary, and operation is rarely of any benefit. A varying proportion were never gall-bladder cases and belonged to the gastro-

enterologist rather than the surgeon. This group certainly represents the unsolved problem of biliary disease and the surgical attempt at relief.

There is hardly a question of the choice of operative procedure. With perfected technic and average skill, excision is comparatively safe and carries with it a shorter convalescence and in every way less morbidity. The end-results are ordinarily good in 85 or 90 per cent of a series, whereas in simple drainage symptoms may expect to persist or recur in 40 per cent of cases so treated. In this series, for instance, six cases had excision where formerly drainage was done, whereas only one excision case came to operation later for a condition which the original operation did not forestall (stones reforming or overlooked in the common duct). While cholecystostomy is still recognized practice, it should be resorted to only in operations of necessity where the emergency permits of the least operative effort. Practically all of our surgery on the gall-bladder was done under gas-ether anesthesia. Spinal anesthesia undoubtedly offers some very decided advantages.

Probably the most impressive lesson in surgery of the gall-bladder is that which teaches never to operate for an acute process in or about the gall-bladder except under the most imperative circumstances. It is a rare thing that a case is lost by postponing operation, but it is very probable that many deaths have followed operations undertaken in an acute process or before the disease is sufficiently quiescent. The gall-bladder is so situated that it is early walled off from the general peritoneal cavity, and it is certainly the rare exception that the most acute process will not go over to a safe operative interval. In this connection, an outstanding surgeon[3] has aptly said that surgery has been made safe for the patient and now the patient must be made safe for surgery.

TABLE I

SURGERY OF THE GALL-BLADDER (JANUARY 1, 1920, TO MAY 1, 1933)

Statistical Data

Total number of cases	298
Males (19%)	55
Females (81%)	243
Youngest patient	18
Oldest patient	69
Average age	39

78% of the women had had one or more pregnancies.

TABLE II

SURGERY OF THE GALL-BLADDER (JANUARY 1, 1920, TO MAY 1, 1933)

Incidence of Calculi

Total number of cases	298
Calculous gall-bladder (73%)	219
Associated calculi in common duct	14
Stones in common duct only	2
Non-calculous gall-bladders (26%)	77

TABLE III

SURGERY OF THE GALL-BLADDER (JANUARY 1, 1920, TO MAY 1, 1933)

Analysis of Non-Calculous Cases

Total number of cases	77
1. Pathology-gross (gangrene, empyema, thick infiltrated walls, acute distended, rupture, one stricture, common duct, etc.)	24
2. Previous cholecystostomy and pathology admitted	6
3. So-called "strawberry" gall-bladder	7
4. Less well defined pathology (peri-cystic adhesions, distended viscus emptying with difficulty, palpable glands, etc.) Only one in this series had definite biliary colic	30
5. No gross pathology, but history of characteristic biliary colic	8
6. Carcinoma	2

Normal appendix removed 21 times, diseased appendix removed 20 times, normal appendix left 3 times, appendix previously removed 17, and no record appendix in 16 cases.

TABLE IV

SURGERY OF THE GALL-BLADDER (JANUARY 1, 1920, TO MAY 1, 1933)

Operative Procedure

Total number of cases	298
Simple cholecystectomy	272
Cholecystectomy and drainage common duct	10
Removal stones from common duct only	2
Cholecystostomy	10
Ideal cholecystotomy	1
Exploration and drainage	1
Exploration (carcinoma)	1
Duct reconstruction	1
Deaths	8
Mortality rate	2.7%

TABLE V

SURGERY OF THE GALL-BLADDER (JANUARY 1, 1920, TO MAY 1, 1933)

Analysis of Hospitalization

Data based on the last 236 cases of the series of 298

Average days pre-operative treatment	4
Average days post-operative care	18
Average stay in hospital	22

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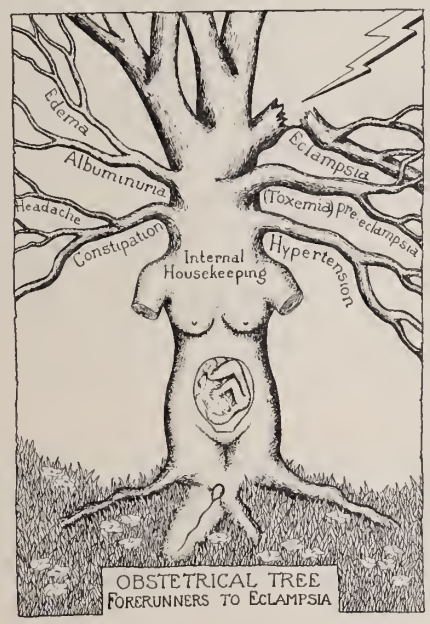
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TREATMENT OF ECLAMPSIA.*

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Therapeutic approach of this dreaded obstetrical complication falls under two divisions —prophylactic and curative.

The prevention is in many ways more important than its actual cure and is identical with that recommended for pre-eclamptic toxemia. This is true, because, after the condition makes its appearance, pathological lesions have already gained a foothold. The particular scope covers the entire broad field of the conduct of the hygiene of pregnancy—prenatal care. Every physician should be thoroughly familiar with this phase of obstetrics and attach a more rigid importance than heretofore and demand a hearty support and cooperation of his patient. The necessity of regular and frequent examinations of urine, blood pressure readings, weighing of patient and appropriate calcium dietary plan cannot be over-emphasized. The sphygmomanometer is somewhat like a barometer. To a sea captain the reading of the barometer indicates



storms or fair weather ahead. To the obstetrician a blood pressure reading indicates easy or labored cardiac action, and elevation of pressure may give evidence of an impending toxemia. It may represent the "red-light" danger signal.

It is said that lightning never strikes twice in the same place; but disease does—it falls on prepared ground. The forerunners of eclampsia should be fraught with much danger, but can be largely prevented by rigid prophylaxis.

In the above diagram (obstetrical tree) I have attempted to show the forerunners of eclampsia. The spermatozoön is implanted, followed by pregnancy with its associated metabolic changes. When the physiological process becomes pathological, the tree (patient) becomes stunted in its growth, the branches droop and lightning tends to strike the vital parts, causing disaster, often destruction.

The mortality from eclampsia may be reduced two-thirds by early recognition and treatment of pre-eclamptic toxemia.

If the objective in ante-natal care is only to minimize the occurrence of eclampsia it will be worth the while.

Recently, beneficial effects of calcium therapy in hepatic toxemias and eclampsia have been reported.

Since the true etiology of eclampsia is unknown, our treatment must be placed upon an empirical foundation.

There are two general groups, one advocating radical and the other conservative methods, and each possessing certain merits. The radical group subscribes to the belief that since eclampsia occurs only in connection with pregnancy and the convulsions usually cease when the uterus is emptied, the logical way to treat the condition is to terminate pregnancy. The conservative advocates believe that this is unnecessary and is usually harmful. However, it is very evident that the strong tendency today is toward conservatism.

The treatment may be divided into four great plans: sedative; measures to reduce blood pressure; eliminative; and operative. Results are much better in a hospital than in a home. The patient should be isolated in a quiet semi-dark room and active measures promptly instituted. A nurse should be in constant attendance until the acute storm has subsided. This is extremely important, as the patient's life may depend upon the nurse's conscientious

*Read before the Richmond Academy of Medicine, May 9, 1933.

and intelligent attention to the minute details of the prescribed instructions given by the physician. If comatose, the patient is placed on her side so that mucus can escape from the mouth. False teeth should be removed. To avoid the biting of the tongue, a large wooden clothes-pin may be wrapped in a thin handkerchief or gauze and placed between the jaws.

No one can secure the best possible results by becoming fanatically attached to a single plan of treatment; no two patients are exactly alike and frequently certain modifications or added steps must be made to suit the individual case. The general aims which underlie the conservative methods are: an attempt to reduce the toxicity or lessen the nervous irritability, or both. Veit was the first to advocate the use of morphia. Since its introduction many methods have been outlined. A modification of Stroganoff's plan, as employed at Johns Hopkins Hospital and which has been productive of encouraging results, is as follows:

Immediately upon admission, patient is given ¼ gr. morphia by hypodermic; she should be catheterized, then bled for 200 c.c under nitrous oxide anesthesia if conscious. Venesection is done only when it is necessary to obtain a blood specimen for research work. Water should be given freely when conscious; if patient cannot drink on account of coma, the intravenous administration of 500 c.c. of 5 per cent glucose solution should be considered. Too much stress cannot be laid upon attempting to feed an unscious patient, as aspiration pneumonia may occur as a puerperal complication. Delivery should not be done until cervix is fully dilated; then, by the simplest operative means, unless spontaneous delivery seems certain.

One hour after admission—If comatose, give 30 grs. chloral in 100 c.c. milk per rectum. If conscious give by mouth.

Two hours after admission—¼ gr. morphia by hypodermic.

Seven hours after admission—30 gr. chloral, as above.

Thirteen hours after admission—22½ gr. chloral, as above.

Twenty-one hours after admission—22½ gr. chloral, as above.

In giving morphine, the writer uses ¼ gr. every two hours until the respirations range between ten and twelve per minute. Chloral is not administered routinely, fearing the toxic action of the drug. No chloroform is used because of its tendency to increase the liver necrosis incidental to the condition.

During the past few years, Lazard, Dorsett, Dieckmann and others have reported noteworthy results following the intravenous injection of 20 c.c. of a 10 per cent solution of magnesium sulphate every hour or two until convulsions cease. No other medication is used. Lazard reported 103 cases with a mortality of 13.5 per cent. He suggests that a solution of calcium chloride be on hand for intravenous use as an antidote, in the event toxic symptoms develop. Calcium ion is stimulating and is, therefore, a physiological rather than a chemical antidote. It is absolutely essential that the magnesium sulphate should be chemically pure and the solution sterile. At present, properly prepared solutions are available in ampoules and the element of doubt is thus removed. This drug when administered serves as a valuable agent for the control of convulsions in eclampsia. It greatly shortens the stage of coma, lowers maternal mortality, and to a certain degree the fetal mortality.

The newer preparations, luminal, sodium amytal, nembutal, and pernocton, according to some observers, have replaced morphine to a great extent and likewise reduced the general mortality. Sodium bromide proves a valuable adjunct in the sedative treatment, and is best given per rectum.

According to McPherson, venesection is done if the systolic blood pressure is over 175. About 500 c.c. of blood may be withdrawn. It is best not to permit too much bleeding for there may be a considerable loss of blood at the time of delivery and shock may ensue. On the other hand, if no venesection has been performed it is advisable to allow the patient to bleed just a little rather than check, since bleeding is one of the adjuvant means of readjustment. Lichtenstein, of Leipzig, depends entirely upon venesection.

Mention may be made of the Tweedy method at the Rotunda Hospital, in Dublin, in which elimination is stressed. He gives no food, employs gastric and bowel lavage with large amounts of sodium bicarbonate; has the patient lie on her side with foot of bed elevated, and uses only small doses of morphia.

Other measures which are helpful are catharsis and diaphoresis to produce elimination. Either croton oil, Epsom salts or castor oil may be used when gastric lavage is employed, or, perhaps, for better results, two

minims of croton oil in a dram of olive oil may be given orally. If sweating is resorted to, better results follow when the patient is placed under a portable sweat cabinet and subjected to a steam bath, than from the older plan of using the blankets. During the past few years these measures have not proved of any real value. An objection raised against packs and sweats is that they concentrate the toxins in the blood, thus increasing irritation to the nerve centers while the amount of poison eliminated through the skin remains negligible.

Water can be administered either by proctoclysis, hypodermoclysis or intravenously. Titus recommends hypertonic glucose solutions intravenously—not with the fixed purpose of furnishing fluids as for the effect of the glucose on liver regeneration. He strongly urges that the prevalent under-dosage be avoided, and glucose in sufficient concentration (25 per cent) be given to produce a full therapeutic effect. Thalhimer believes detoxication of the patient occurs more readily if insulin is given at the same time.

It should be constantly borne in mind that at no time should large amounts of fluids be given, for it produces cardiac over-taxation and renders the patient prone to pulmonary edema. In this connection it is well to stress the point that digitalis therapy should be enforced, not necessarily in massive doses, to guard against cardiac collapse and in the prevention of the above complication. In the use of colonic irrigation, either glucose or sodium bicarbonate is preferred, repeating same every four or five hours. Irrigations are essential because these help to empty the bowel, stimulate the kidneys to secrete, produce moderate diaphoresis, to a certain degree dilute toxins by the absorption of fluid, and prevent acidosis. It also excites uterine contractions and thus may bring about the onset of labor.

From the foregoing facts it can be readily seen that the advances in our knowledge of eclampsia have not been marked and we have learned little to better our treatment. Recently, greater attention has been paid to the water balance in the system, and this is, perhaps, the only real improvement.

A series of cases have been presented by Arnold and Fay illustrating a method of fluid limitation and dehydration therapy. These observers claim it is unnecessary to adhere to the belief that large quantities of fluid are essential to wash out the toxins and to recognize that many of the toxic symptoms are produced by the use of excessive fluids. The cardinal points in their line of treatment are as follows—Fluids must be judiciously withheld until elimination by bladder, bowel and skin is established. Following response to dehydration therapy, fluids can be forced in proportion to elimination. Saline therapy is contraindicated, due to the fact that there is a retention in the tissues of chlorides and sodium ion, resulting in blood concentration. The method of blood dilution consists in the intravenous use of hypertonic glucose solutions (20 to 25 per cent), this serving not only as a hypertonic dehydrating agent but to combat acidosis through its nutritional value and by direct stimulation of the renal glomeruli. This method has been in use during the past two years, and the authors strikingly point out the absence of any mortality in their series.

In the pre-eclamptic type it is well to administer one ounce of castor oil with 10 grains of quinine, and repeat 5 grains in three hours. The insertion of a bag or artificial rupture of the membranes will aid materially in the induction of labor.

With the onset of the first convulsion, the case assumes a most serious aspect. The nervous balance has been greatly disturbed and one convulsion is likely to lead to another. Therefore, the chief aim should be to prevent the death of the mother.

Braun emphasized the fact that convulsions ceased or became less severe following delivery. Dührssen showed that in 93 per cent, and Olshausen 85 per cent, such a result was noted. Seitz reported 123 cases in which convulsions ceased after delivery, there was a mortality of 20 per cent in spite of the absence of convulsions. Another strong argument for early delivery is the larger number of children saved thereby. There are many who advise Caesarean section, vaginal hysterotomy and accouchement forcé. The results, however, are not entirely satisfactory. Peterson collected statistics of both vaginal and Caesarean section in more than a thousand cases, and, although apparently advocating this treatment, the mortality reached about 25 per cent.

It is well to note that eclamptic women do not endure surgical operations well. We are dealing with a severe toxic and degenerative affair, and with the addition of local or general anesthetic they easily sucumb to shock. Caesarean section as a routine procedure should

be discouraged. It is best recommended only when there is a long, rigid, and undilated cervix, or in the presence of a tumor or contracted pelvis, large fetus or unfavorable presentation.

Theoretically, there is much to advise in the operative delivery. It is a known fact that the convulsions are due to pregnancy; it is a common occurrence to note that after delivery the convulsions usually cease. It would seem, then, that the immediate delivery ought to cut short these seizures, but as a matter of fact this does not always take place, and, even if there were no convulsions, the mortality may still remain high. Statistics show that with eclamptics treated by radical methods, the maternal mortality approaches an average of 10 to 40 per cent, fetal mortality 40 to 50 per cent.

In order to shorten the second stage, a mid or low forceps may be employed, or version and extraction, the amount of anesthetic (preferably nitrous oxide and oxygen) used being very small.

Several years ago surgical intervention was by far the method of choice. At present the pendulum is strongly directed toward conservatism. Up to 1925, Stroganoff treated 300 cases by means of his conservative therapy with maternal mortality of only 2.6 per cent; McCord 3 per cent in 100 cases; Beck 6.3 per cent; Stockholm Maternity Hospital 9 per cent; at Rotunda, in Dublin, Fitz Gibbons' mortality reached 10 per cent; Williams' 13.3 per cent. The results of the discussion at the British Obstetrical Congress in 1923 showed clearly that palliative measures were satisfactory, and since that meeting non-radical steps have been popular in Great Britain and Ireland. Solomons, of Dublin, states that Caesarean section in Ireland met with disaster in the treatment of eclampsia. DeLee adheres to conservative methods, but induces labor if patient fails to improve, or if she is near term. He further points out if patient is in active labor, making rapid progress, and her condition not alarming one should cling to conservative therapy.

Clinically, it is observed that pains usually begin if the convulsions are at all severe, and labor is often rapid when once begun. If labor has not yet set in, the insertion of a bag or rupture of membranes will usually bring about the desired results. In certain cases it may be best to wait until the active convulsive stage has passed. Induction of labor may be easily accomplished while the patient is in deep narcosis.

For the sake of completion, mention is here made of other forms of medication the use of which has been more or less discarded: thyroid extract, veratrum viride, gum acacia, intravenous injection of serum from normal pregnant women, lumbar puncture and renal decapsulation.

Since convulsions may recur even after a week, the patient requires constant supervision, especially if signs of puerperal psychoses develop, for in such types an attempt may be made to kill herself or baby. All sources of worry and irritation should be removed. Nursing should not be permitted until patient has regained consciousness for few days and when her strength justifies.

Conclusions

Adequate prenatal care has markedly reduced eclampsia. Rigid adherence to calcium intake is important. Treatment of preeclamptic toxemia will usually prevent true eclampsia and renal pathology. Conservatism is advocated with the following points of emphasis: Protect patient in a hospital; attempt to save life of mother and fetus; narcosis with morphine, chloral and bromides is preferred; venesection lowers blood pressure and reduces pulmonary edema; magnesium sulphate (20 c.c. of a 10 per cent solution) is very useful; hypertonic glucose solution is given intravenously; volume of fluids must be in moderation; open avenues of elimination; high colonic irrigations are helpful. After the attack, patient is closely guarded for at least three years, especial attention being paid to renal function, and no pregnancy is advised until that time. The woman with eclampsia "does not vaccinate herself" or develop an immunity. Recurrent eclampsia takes place in about 2 to 5 per cent of cases. Nephritic toxemia is very apt to appear in later pregnancies.

The fact is to be re-emphasized that we must be radical in our conservatism; half-way measures, such as employing morphia timidly in 1/8 gr. doses and removing little or no blood, invite failure. Eclamptics are poor surgical risks and liable to shock and infection; therefore, operative intervention should be done only in selected cases. In eclampsia there is a concentration of the blood. Changes of pro-

teids may be the cause of the alteration in blood volume. Convulsions cause an acidosis which intensifies the changes in the proteins. The concentration precedes the convulsions and is intensified by the convulsions; hence, treatment of this condition—both threatened and active—is to dilute the blood.

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FOLLICULAR AND DENTAL ROOT CYSTS—THEIR CLINICAL, PATHOLOGICAL, AND ETIOLOGICAL FEATURES.*

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I. Introduction

In a recent article on cysts occurring in the maxillae and mandible one author[1] expressed the opinion that a review of their etiology would seem elementary and unwarranted. On the other hand, Blum,[2] who has written quite extensively on the subject, says it is remarkable that in spite of their frequency so little is known of cysts of the jaws, particularly as to their origin. A review of the literature seems to bear out this latter author's contention.

A variety of names have been used to designate follicular and dental root cysts and the frequent confusion of terms is not surprising. As to their true nature, the connotation of the two terms used here seems to be greater than that of any of the others, and in the recent literature they appear to be the more generally accepted. However, it would seem proper at this point to enumerate the more common synonyms. Follicular cyst is synonymous with dentigerous cyst and odontocele; dental root cyst is synonymous with radicular cyst, inflammatory root cyst, granulomatous cyst, pericemental cyst, etc.

It has been said that a correct diagnosis will lead to proper treatment. This is true, but I would enlarge upon this axiom by saying that with a thorough knowledge of the etiology as well as of the clinical and pathological features of a condition, an incorrect diagnosis will be the exception. With reference to the two types of cysts under discussion, an understanding of these three factors is of utmost value in indicating to the surgeon the type of operation which can best be employed and the results he can reasonably expect. For example, the immediate closure method, first described by Harrison,[3] may be admirably used in certain of these cases but could not be satisfactorily applied in others. Both types of these cysts are benign, and, when recognized as such, the more radical treatment necessary for malignancies is avoided. This will mean a conservation of teeth, bone, and soft tissue, which in turn will result in less facial deformity and impairment to the masticating apparatus.

When an extensive circumscribed area of bone destruction is discovered within the maxillae or mandible, the question to be decided first is: Is the condition malignant? In many cases x-ray examination will confirm the diagnosis. In others, a positive pre-operative diagnosis is difficult or even impossible. A careful study of the mouth and dental arches with a history of any missing teeth will often give a valuable clue in these doubtful cases and may not only establish the fact that the case is or is not malignant, but, if it is one of these benign cysts, will often determine its type. The following case which was observed by Bloodgood[4] will illustrate this point:

> A patient complained of several loose teeth in the mandibular molar region. A radiograph was made and the several teeth removed on account of "root abscesses." The wound in the mouth did not heal, and after a year another radiograph was made of the same region from which a large area of bone destruction was diagnosed as benign follicular cyst. Malignancy was not suspected and an operation was done on this radiographic diagnosis alone. Routine tissue examination brought in the report of spindle-celled sarcoma, and subsequent surgery and irradiation failed to save the patient's life.

In citing this case the implication is not that the diagnosis would have been correct had merely a careful examination of the mouth been made, but had this been done, benign follicular cyst would have been excluded early as a possibility. In this particular instance a number of roentgenologists and surgeons diagnosed the condition from the radiograph as benign follicular cyst. Bloodgood himself says of the case that no one remembered to

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make a careful study of the condition of the mouth. An extensive leukoplakia of the oral mucous membrane of long standing was overlooked.

II. Characteristics Common to the Two Types

Of the several types of intraosseous cysts of the maxillae and mandible, the follicular and dental root cysts are by far the most common. The smaller ones are often discovered by accident in the course of routine x-ray examination of the teeth, when they are easily diagnosed. The larger ones, however, have many characteristics in common and their differentiation is sometimes difficult.

Any part of either jaw may be involved. In the maxilla they may attain such size that the maxillary sinus is nearly obliterated, being compressed to a very small size but retaining its entity within its bony cavity. At times the bony partition between the sinus and cyst will have been destroyed and the cyst lining will be contiguous with that of the sinus and there may or may not be intercommunication between the cyst and sinus. The bony roof of the mouth and the floor of the nose or orbit may be invaded. The nasal passage on the affected side may be partially or completely obstructed. In the mandible they also attain considerable size. Here they often deflect the normal inferior dental canal and its contents. A neuralgia about the face, whose cause is at first vague, may be due to pressure on a nerve by a growing cyst.

There may be a marked bulging of the much thinned cortical plate of bone which will produce "parchment crackling" when digital pressure is applied. The bulging is usually toward the buccal side, and may be so extensive that there is a deformity of the face to be noted externally. A lack of symmetry in a dental arch is sometimes the earliest clinical indication of a cyst. This is noted often in the maxillae when an otherwise normal dental arch is distorted by a downward displacement on one side. Fracture of the mandible from a very slight trauma when there has been no suspicion of a cyst has sometimes led to the discovery of a very extensive one. The mucous membrane over these cysts appears normal unless secondary infection has occurred, and while they may be uncomfortable due to their size and location, they are rarely painful. In the absence of infection there is no enlargement of the submaxillary or cervical lymph glands, unless a malignant change has occurred, and this is rarely the case.

The *radiographic appearance* of the larger cysts of both types is very similar. The margins surrounding the dark area of the cavity are usually sharply defined and smooth, and there may or may not be an outer rim of condensed bone. Frequently, especially in the maxillae, the radiograh will show bony septa, giving to the cyst a multilocular appearance. It has generally been found, however, that the septa are incomplete and that the cysts are unilocular. This may be demonstrated preoperatively by aspirating some of the cyst fluid and injecting a quantity of some radiopaque fluid into the cavity and making a series of radiographs with the head in various positions. If the radiopaque medium used is of sufficient specific gravity to displace any of the remaining cyst fluid, it will be seen from such radiographs that the medium will flow freely to all parts of the cyst. A degree of success in determining the size and extent of some of the larger cysts has been had by the injection of the radiopaque iodized poppy-seed oil (lipiodol) followed by radiography. Radiography with this oil is also of value in determining whether there has been involvement of or communication with the maxillary sinus.

Histologically, the walls of these two types of cysts are essentially the same, but are subject to many modifications. Examination of a section seldom offers any conclusive evidence as to its type. There are two layers, an inner lining and an outer layer or wall proper. The inner lining consists of epithelium which may be stratified or consist of but one or two layers of flattened or cubical cells. The wall proper consists of fibrous connective tissue which may be of varying thicknesses. It may be very cellular or very fibrous, and its fibers may be loose or very densely packed. Some cysts of the maxillae have been reported as being lined with ciliated columnar epithelium. It is believed that such a lining is derived from invasion of the maxillary sinus by the growing cyst, or that its origin is from an aberrant germ of the sinus, having no connection with the dental system.

The *content* of these cysts is usually viscous and sticky, having a grease-like feeling between the fingers, or it may be very thin and watery. Sometimes it is of a semi-solid consistency. In color it is usually light yellow

or amber, but it may be maroon or dark brown due to the presence of blood. Cholesterol crystals, which are nearly always present, impart to the fluid a "mother-of-pearl shimmer" in reflected light. In many of the older cysts the fluid is sterile, and when bacteria are found in the absence of any inflammatory clinical signs, they are usually of the non-virulent type.

III. Follicular Cysts

A follicular cyst may be defined as an abnormally distended tooth follicle wall lined on its inner surface with the modified epithelium of the enamel organ, and usually containing within its sac the tooth from whose follicle it arose.

Follicular cysts may be found in patients of any age, but usually undergo their most active growth during the period of eruption of the permanent teeth, or between the fifth and twenty-fifth years. They may arise from the follicle of any tooth, but the most frequent ones involved are those of some of the most frequently unerupted teeth, which are, most notably, the maxillary cuspids and mandibular third molars. In the anterior region of the mandible these cysts may extend from one side to the other; in the maxillae they seldom extend beyond the median plane from the affected side.

The follicle of an unerupted supernumerary tooth will often undergo cystic distention and the origin of such a cyst may be obscure until the discovery of the tooth. Cysts of the follicles of deciduous teeth are extremely rare. Howard[5] has reported a very interesting case in an infant of twenty-eight months in which there was extensive swelling of the cheek and inflammation of the eye for several months prior to its correct diagnosis. The lacrimal duct was occluded by the cyst which arose from the follicle of an impacted deciduous cuspid.

The frequency of occurrence of follicular cyst about the maxillary cuspid is not surprising when the deep-seated position of its germ and frequency of impaction is remembered. In this connection it is interesting to note that Todd,[6] who has so ably described the evolution of the dentition of mammals, states that the deeply situated rudiment of this tooth is a sure sign that in early man it was as powerful and long-rooted as it is in the anthrapoids today. Most of the follicular cysts which invade the maxillary sinus arise from the follicle of this tooth, when many times the tooth is found in a position very remote from normal, and symptoms may be referred to the sinus which complicate a diagnosis.

Careful dissection of a follicular cyst *in situ* will show the root of the contained tooth to be more or less firmly imbedded in bone, and upon close examination the cyst wall will be found to become very thin as it nears the tooth. The wall is tightly attached to the root, the attachment beginning at the tooth neck and continuing along the sides of the root over the apex, the entire tooth being thus enveloped. A section cut here would show that the epithelial lining of the cyst stops at the neck of the tooth where the attachment of the wall to the root begins. The thin portion of the wall which is attached to and envelops the root consists of fibrous tissue which may contain a few scattered epithelial rests. If the root is not completely formed, as is frequently the case, there will be found a sheath of epithelium at its apical end. This is the epithelial sheath of Hertwig which is formed from the enamel organ. In enucleating these cysts it is important to remove or destroy the tissues which contain these epithelial remnants, for failure to do so might result in recurrence.

The fact that numbers of unerupted teeth are seen in individuals of all ages with no cyst formation, and, also, the frequent occurrence of two cysts arising from the follicles of two corresponding teeth, i. e., one on each side of either the maxillae or mandible, suggests that the constitutional tendencies of the individual play a part in their genesis. This thought was advanced by Bunting.[7]

It would also seem reasonable to suppose that an irritation of some kind to the epithelial cells lining the follicle wall could be the primary cause of its cystic distention. In the case of an impacted tooth where there is a physical obstruction to its movement or growth, this obstruction as an irritating factor is obvious. But many of these follicular cysts are seen about teeth with no apparent cause for their failure to develop or erupt. In these latter cases the failure may be due to a physiological disturbance, perhaps in calcium metabolism. Whether the cause of noneruption is physical or physiological, that cause would seem to be a factor in the production of a primary irritation. It would seem to follow then, that with a process of degeneration and proliferation once under way in the

epithelial lining, that a secondary and continuous irritation would be set up due to pressure of the increasing fluid and cystic distention would continue. It should be remembered, as has been pointed out by Orban,[8] that the epithelial cells lining the coronal portion of the normal tooth follicle wall remain intact as a lining until the tooth erupts, a fact which would indicate that these cells have a function to perform other than that of building enamel.

IV. Dental Root Cysts

A dental root cyst may be defined as a cyst of inflammatory origin, arising at the apex of an erupted tooth, and having its inception in a periapical granuloma which contained certain epithelial remnants of the enamel organ.

There is no definite age limit for the occurrence of dental root cysts, though they generally occur in adults. They may be found at the root of any permanent erupted tooth, and are most often seen arising at the root of the maxillary lateral incisor, this being due, in all probability, to the frequency with which this tooth suffers from caries and subsequent infection and death of its pulp. A search of the literature fails to reveal any cases reported as occurring about the deciduous teeth.

The chief difference in the clinical and pathological features of follicular and dental root cysts, other than what is obvious from their respective definitions and the foregoing description, is the tendency of the latter to extend through the median plane in the maxillae. This extension to the opposite side seldom occurs in the follicular cysts, as has been mentioned.

The factors which bring about the production of periapical granuloma are comparable to those which give rise to granulation tissue elsewhere in the body. In the vast majority of cases the initial inflammation is due to exposure and infection of the dental pulp with its subsequent death. However, granulomas are also observed at the apices of teeth free from caries and otherwise apparently sound and with pulps that may be vital or non-vital. In these latter instances, trauma to the periapical tissues is probably responsible for the primary inflammation. If the cause of an inflammation is not removed and there are recurring acute and subacute flare-ups, the process becomes one of chronic inflammation and the granuloma results.

A periapical granuloma is a mass of granulation tissue which varies in size from that of a pea or smaller to that of an olive. It has a capsule of fibrous connective tissue which is attached to the tooth root near its apex. The granulation tissue within the capsule consists of many dilated thin-walled vesesls in a stroma of fibrous connective tissue which is interspersed with lymphocytes, plasma cells, leukocytes, and giant cells. The lymphocytes predominate.

All granulomas do not give rise to cysts. To undergo cystic changes a granuloma must contain epithelium. Epithelium is not a constant finding in granulomas, however, and one that does contain epithelium differs in this respect from granulation tissue which occurs anywhere else in the body[9]. As has been shown by Orban[10] and Higaki[11], epithelial rests derived from the sheath of Hertwig are often found in a quiescent state in the normal pulp and periodontal membrane, and also, at times, in the osseous canals which transmit vessels and nerves to the tooth and in the cancellous bone of either maxillae or mandible. These rests are believed to constitute the epithelial elements found in granulomas.

Cyst formation from a granuloma is due to a combination of factors, but changes in its epithelial content stand out as the more important. Degeneration of the granulation tissue is followed by a proliferation of its contained epithelium which tends to surround and encapsulate the degenerated area. This is probably the beginning of cyst formation. Bacteria may be responsible for this primary degeneration, the end-product of which might be of such a nature chemically that it will produce degenerative changes in the epithelium. With the increase in fluid from these degenerated tissues there is the added influence of mechanical pressure, which, it will be remembered, is also a factor in the growth of a follicular cyst. Thus, we see that bacterial, chemical, and mechanical causes may all play a part in the production and growth of a dental root cyst, there being a seemingly endless process set up unless relieved by rupture, which is unusual.

A root cyst may be retained after extraction of the tooth at which root it arose, or such a cyst may develop from a retained granuloma.

A retained dental root cyst might offer difficulty in its diagnosis when seen in a patient with an unerupted tooth in a nearby region. In other words, it may be mistaken for a follicular cyst arising from the follicle of the unerupted tooth. As a granuloma may be found at the apex or along the lateral sides of the root of a tooth which has a vital pulp, so might a cyst have its origin in such a granuloma, the cyst developing to large size and the tooth retaining a vital pulp.

V. Conclusions and Summary

A discourse upon follicular and dental root cysts would not seem complete without mention of the adamantinoma or multilocular cyst, which is the third of the so-called epithelial odontomas. Follicular and dental root cysts are benign. The adamantinoma is considered malignant, the degree of malignancy depending upon the extent to which its epithelium has the characteristics of the embryonal epithelium. Cohnheim's theory of embryonal tissue-remains as an explanation of the cause of malignant neoplasms holds that the closer the tissue characteristics of a neoplasm revert to or retain the characteristics of its mother tissue, the higher the degree of malignancy. A comparative study of the histopathology of the various cysts of the jaws seems to uphold Cohnheim's theory. Follicular and dental root cysts have an epithelium which is far removed in character from an embryonal epithelium, while the typical adamantine epithelial cells resemble more or less closely the ameloblasts of the enamel organ.

It is obvious that this discussion is not an attempt at an exhaustive treatise of the several varieties of cysts occurring in the jaws and their differentiation. The effort here has been to review some of the fundamentals of the pathogenesis of but two types which are the most common. Very often these two types will present modifications which render their differentiation from other tumors or growths of the jaws extremely difficult.

I would like to stress again the possible danger of proceeding with any surgery until all available means are used to establish a diagnosis. We are all aware of the much too common practice of referring a patient with an abnormal enlargement about the jaws to a roentgenologist and relying solely on his report as a basis for treatment. To be sure, an x-ray examination is most essential, but if accepted alone on its face value with but a casual examination from other standpoints, one attempting to do surgery about the mouth will at times fall into grave and irreparable errors.

The other points brought out in the foregoing discussion might be summarized as follows:

1. Clinically and pathologically follicular and dental root cysts present many similarities. No criteria can be set up as to their local point of origin or age incidence.
2. The epithelium found in both of these cysts is derived from different parts of the enamel organ.
3. In their origin, follicular cysts usually involve unerupted teeth. Dental root cysts arise at the apices of erupted teeth.
4. Follicular cysts arise as the result of an irritation not associated with infection primarily. Dental root cysts have their origin in the end-result of an inflammatory process, namely, the periapical granuloma, which usually, but not always, follows infection and death of the dental pulp.
5. An understanding of the pathology of these cysts, which is so essential to their successful surgery, can come only through a thorough knowledge of the embryology of the dental system.

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AN OPERATION FOR THE FUSION OF THE TIBIO-ASTRAGALOID JOINT.*

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A disease or injury to the ankle joint or tibio-astragaloid joint often makes necessary a fusion of the joint to improve the gait or to relieve pain. The joint is in the form of a mortice and because of its location has imposed upon it most of the body weight. Because of the weight thrust through the joint, disruption of the cartilage is disabling.

For years, it has been comparatively easy to produce an arthrodesis of the subastragaloid joint by removing the cartilages of the opposing surfaces. A well stablized foot for weight bearing results within ten to twelve weeks. By the same method, a fusion of the tibio-astragaloid joint requires six to eighteen months. Sliding bone grafts from the tibia on the anterior and posterior aspects of the joint influence very little the length of time necessary to produce a firm ankylosis of this joint. Certain factors that retard union, and at times produce a non-union in fractures of the lower one-third of the tibia, may influence the healing of these bones. Though there is no fracture above the joint to influence the blood supply from the nutrient artery, there is to a greater or less extent, an interference with the blood supply in the region of the incision.

The structure of the bone underlying the cartilage in both the tibia and astragalus is very dense with poor circulation, and the contraction of the strong muscles of the leg in any change of position possibly results in some movement of the joint in spite of the external fixation of casts or braces.

A method of fusing the joint has been attempted with the idea of removing a sufficient amount of bone in both the tibia and astragalus to result in a better blood supply without shortening the extremity, and producing a complete mortise from inside the joint.

During the operation, the foot is held by an assistant in plantar flexion of five degrees for the male, and fifteen degrees for the female. Through an incision over the internal malleolus, a block of bone is removed extending through the joint, one-fourth inch in width and one-half to three-fourths inches in height. This opening, with the three-fourths inch axis in line with the shaft of the tibia, is extended through the ankle joint, its upper one-half in the tibia and the lower one-half in the astragalus. It is carried into the fibula until its inner one-half has been entered and the small block of bone removed.

A graft is taken from the tibia of sufficient width to fill the greater diameter of the tunnel, and twice the length of the depth of the tunnel through the joint. The graft is divided at its center and placed cortex to cortex to double its thickness. The two pieces of graft are driven in as one, through the opening in the malleolus and through the joint into the fibula. External fixation with casts or braces becomes unnecessary as the graft acts as a key, producing complete fixation from the inside.

E. M., age 15, a white female, was seen September 30, 1930, complaining of pain in the right ankle following exercise. There was present moderate swelling on both anterior and posterior borders of the tibio-astragaloid joint. She was seen twenty-three months later complaining of severe pain and swelling of two months duration following a slight twist of the ankle. She appeared under-nourished and very excitable. Von Pirquet test was positive and roentgenograms showed marked roughening of the tibio-astragaloid joint. The foot was fixed by muscle spasm. A diagnosis of tuberculosis of the tibio-astragaloid joint was made. A cast was applied and she was put to bed for three months, followed by limited exercises without weight bearing for two months. Improvement in her general condition fol-

*Read before the Roanoke Academy of Medicine, Roanoke, Va., on November 6, 1933.

lowed. On January 23, 1933, there was very little swelling of the joint, but pain with muscle spasm was present on weight bearing.

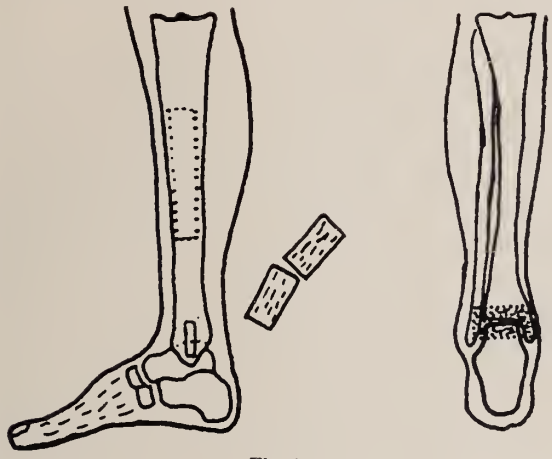


Fig. 1.

She was admitted to the hospital on January 23, 1933, and operated upon on January 26, 1933. Under ethylene anesthesia, a bone graft five-eighths inch wide and 5 inches in length was removed from the upper part of the tibia. The length of the graft was twice that of the width of the ankle joint which was two and one-half inches, measured from the inner surface of the internal malleolus to the center of the external malleolus. The five-inch graft was cut at its center and lapped, cortex to cortex. It was placed in a saline sponge until needed. A two-inch incision was made in line with the shaft over the internal malleolus. The periosteum was elevated and the soft tissues retracted. With a narrow bladed osteotome, a block of bone one-fourth by five-eighths inches was removed from the medial surface. The center of the opening was made to correspond with the center of the tibio-astragaloid joint and directed to emerge at the center of the fibula. The foot was held in fifteen degrees plantar flexion and the tunnel carried through the tibia and astragalus and through the medial one-half of the fibula. The specimen of bone and cartilage removed showed pathological changes. The cartilage was dull and stripped easily from the bone, but no free pus was encountered. The diagnosis of tuberculosis was substantiated by guinea pig inoculation.

After closing the wound, the joint was found to be stabilized. The bone graft, which acted as a key, made unnecessary the immediate application of a cast. On the tenth day, after removal of the stitches, a cast was applied from toes to knee. The cast was removed sixteen weeks from the date of operation, and weight bearing allowed four weeks later. There has been no pain or discomfort in the ankle joint since the day of operation.

The key graft operation will probably render unnecessary the plaster cast fixation. There is a smaller probability of draining sinuses resulting from the operation, as the opening in the bone is completely filled by the graft. Fixation may be supplemented by the removal of cartilage between the bones together with sliding grafts along the tibia into the astragalus. The key graft may also be employed to produce internal fixation in the operations of Dr. Vulpius or Dr. Straub. They produce arthrodesis by dislocating the joint, removing the cartilage and, after longitudinally splitting the astragalus, wedging it apart to fit both malleoli. The former uses cartilage to fill the gap in the split astragalus and the latter makes use of a bone wedge from the neck of the astragalus.

In diseased hips, the use of the extra articular bone graft, acting as an instrument of internal fixation in producing ankylosis, has been accepted as the method of choice. The removal of the joint cartilage has been found to be unnecessary due to the complete fixation of the joint by the bridging bone. It is to be hoped that the key graft operation will produce a like result, thereby eliminating a massive operation which makes necessary the division of nerves and tendons around the ankle joint and also prevents the stirring up of a latent infection.

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AN OVERLOOKED FACTOR IN SUSCEPTIBILITY TO THE COMMON COLD.

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There is probably no more formidable enemy to human health and comfort than the common cold, the widespread incidence of which continues to defy both etiologic explanation and prophylactic control. This ubiquitous malady not only inflicts upon this country a direct economic loss of four hundred and fifty million dollars annually,* but paves the way to a host of refractory catarrhal difficulties that impose a further sacrifice of occupational efficiency and an ever-increasing need for the largest group of specialists in the entire field of medical practice.

Recent efforts to curb the ravages of this universal plague have been focused upon the possible identification of a specific causative agency, the assumption being that prospective laboratory findings offer about the only hope of success. There has been no definite proof, however, that a distinct bacterial cause exists, and even if one were ultimately isolated it is questionable whether the perplexities of the problem would be materially lessened. It is rather difficult to visualize serological protection against a disease which itself tends to augment, rather than diminish, subsequent susceptibility. More readily conceivable are the altruistic possibilities that might accrue from the detection of an eliminable anatomic factor in man's vulnerability to catarrhal infections. Theoretically, a structural abnormality could induce lowered resistance to organisms normally present in the nose and throat and, if common to a great many individuals, might more logically explain the prevalence of "colds" than the supposed aggressiveness and specificity of an undiscovered bacterium or virus. Such an hypothesis is quite consistent with the negative results of bacteriological investigation, and is by no means a vain conjecture. It is actually true that clinical research has overlooked one correctable somatic impairment whose predisposing influence is empirically and convincingly demonstrable, and whose delayed recognition seems measurably responsible for the erstwhile futility of the fight against the common cold.

This overlooked factor is none other than that apparently innocuous structure,—the uvula—so often carelessly designated as "the palate" by both the laity and the profession. This devitalized and physiologically superfluous appendage has never received any critical consideration beyond that accorded it by Hippocrates, who recognized its frequent elongation as a mechanical cause of paroxysmal coughs and advocated staphylotomy as a corrective measure. Unfortunately, Hippocrates' suggestion has never attained great popularity. Had its practical utility in dealing with innumerable cases of convulsive coughing and incessant clearing of the throat been properly appreciated, a vastly more important potentiality of this procedure would inevitably have come to light long before the twentieth century. The main impediment to this revelation has been, and still is, a superstitious and erroneous conception of the functional importance of the uvula, in consequence of which staphylotomy has been inadequately performed even when "cautiously" resorted to.

A customary degree of hesitancy and conservatism dominated the writer's early employment of staphylotomy, but it soon became apparent that a bolder procedure involved none of the dreaded risks and was much more efficacious and dependable. Gradually this was found to be true up to the point of removing the uvula in its entirety,—an operation which has since been performed many hundreds of times, and with results as unprecedented as the operation itself. Routine use of "*staphylectomy*" for the relief of habitual clearing of the throat and an amenable type of paroxysmal cough eventually revealed the rather amazing fact that it also exercised a remedial influence upon catarrhal conditions of the entire upper respiratory tract. Primarily, this was not an objective disclosure, nor was it even a suspected possibility. It was purely accidental. The original observations must be accredited to patients themselves, who repeatedly called attention to various unanticipated benefits conferred by staphylectomy, notably a relative freedom from "colds," but whose alleged experiences were at first regarded as sheer products of the imagination. Except for the repetition and enthusiasm of these incredible con-

*Based upon statistics of the U. S. Public Health Service.

tentions they might not have aroused the slightest interest, for there seemed to be, at that time, no logical reason to suppose that the mere removal of a small piece of redundant tissue from the faucial arch could produce the remote and phenomenal effects which these patients were wont to ascribe to it. About twenty years have now elapsed since a skeptical investigation of this apparent myth was thus inaugurated, and the unique experience to which it led has afforded incontestable proof of the provocative role of the uvula in uncontrollable recurrences of the common cold and in the intractability of other catarrhal difficulties involving both the nose and throat.

By painstaking follow-up methods and the helpful cooperation of interested patients it has been determined that staphylectomy checks susceptibility to "colds" in excess of 50 per cent. In occasional instances a complete absence of recurrences has been reported for periods of several years, and rarely have indifferent results been observed. Exact percentages of efficiency cannot be tabulated, the controls in this investigation having necessarily been in each case the past experiences of the subject himself. Patients are seldom able to state accurately the number of attacks per year they have previously encountered, but they can make post-operative comparisons that are sufficiently definite for practical purposes, and the contrast is usually so sharp that a precise ratio becomes relatively unimportant. What applies to the comparative frequency of "colds" before and after staphylectomy is equally true concerning the abated intensity and duration of infections that may develop after the uvula has been removed. A peculiar phase of the latter observation is the mildness or entire absence of sinusitis in cases where this had invariably been a troublesome accompaniment or sequel of rhinitis prior to operation.

The effectiveness of complete removal of the uvula has been substantiated not merely through subjective information, but by significant and unmistakable changes in both pharyngeal and nasal structures. The most conspicuous of these visible effects are so prompt and decided in some instances as to literally defy belief. Chronic post-nasal engorgement is reduced to a degree that definitely facilitates nasal breathing, and the characteristic signs and symptoms of pharyngeal and nasopharyngeal catarrh are rendered permanently less pronounced. These clearly discernible effects are more than suggestive of a contributory culpability of the uvula in marked catarrhal tendencies: in fact, they have been so constantly observed as to admit of no other interpretation.

The part played by the uvula in predisposition to the common cold and kindred affections may not appear so strange and inexplicable if we take into consideration the extremely poor vascularity of this structure and its other correspondingly sparse histologic components, which would unavoidably render it less resistant than the substantial and well vascularized portions of the pharynx. Furthermore, its anatomical location is especially favorable to the accumulation of ceaseless installments of bacteria—dangling directly in the pathway of both respiration and deglutition. It is thereby subjected also to more or less mechanical abuse, particularly in the act of snoring. These combined characteristics make the uvula an ideal bacterial nidus upon which micro-organisms gain a flourishing foothold, subsequently invading in overpowering numbers the posterior nares and other contiguous areas that might otherwise be capable of maintaining a relatively healthy status. (In striking conformity with these practical considerations is the well-known fact that the earliest symptom of an incipient coryza is not referable to the nose, but is almost invariably a sensation of dryness and pruritic discomfort in the vicinity of the soft palate, nasal involvement being a somewhat delayed development).

This line of reasoning may appear fundamentally defective in that it wholly ignores the supposed functional requisites of the uvula. But does the uvula really serve any distinct or valuable purpose in the human being, or is it a superfluous and rudimentary structure? In lower animals it is essential to a reflex expulsive mechanism of vital importance. During the act of panting it thus affords protection against the hazardous ingress of flying insects and other foreign material, but aside from its participation in this highly necessary defense of the larynx and pulmonary tract it serves no other purpose for which the major portion of the normal velum palatinum does not alone suffice. The life and habits of primitive man undoubtedly demanded similar protection, but it has been a long, long time since man ran through the

wilds—panting. Since civilization abolished this need of the mouth as an accessory avenue of breathing the uvula has had virtually no function to perform, and protracted disuse has relegated it to the category of obsolete and decadent structures. As in the case of the appendix vermiformis, cessation of function has impaired its blood-supply, decreased its size and substance, lowered its vitality in general and transformed it into a mere rudiment and an insidious pathogenetic factor. Its pathological influence upon adjacent structures might be likened to that of an extraneous growth similarly situated, as there is a direct parallel in the observed effects of excision. Corroborative evidence of this supposed evolutionary and diminutive change in the physical characteristics of the uvula is afforded by a comparison of this almost cylindrical remnant, as it now exists in the human being, with the substantial, broad, triangular curtain suspended in the throat of the lower animal. Scores of dried specimens in the writer's possession bear convincing testimony to this advanced degenerative transition.

Within the past year an interesting counterpart of this hypothesis appeared in the editorial columns of a metropolitan newspaper under the heading: "*Colds and Evolution.*" Although written in the abstract and with no implied reference to the uvula, this article presented a truly prophetic assumption that justifies its quotation, in part, as follows:

"There has been taking place almost insensibly in biological science, these last decades, a change of emphasis not well appreciated even by the biologists. The theory of evolution no longer is regarded as something to be proved. This has been done. Instead, the essentials of the theory now may be accepted as guiding principles in explaining other facts still unclear or in exploring other circumstances still unknown. If the anatomist finds, for example, some bodily organ or structure apparently useless to its modern possessor, it is legitimate for him to assume that this organ once was necessary and that some change in the habits or circumstances of the species has lessened its utility. The familiar example is the human appendix. *The same principle should apply to this mystery of colds.* It is impossible to accuse Nature of deliberately aiding the invasion of men's throats or noses by harmful germs."

The author of this article probably did not actually forsee an early substantiation of his theoretical surmise, but it is nevertheless true that the uvula is the evolutionary agency involved and that its general recognition as such will render this "mystery of colds" far less enigmatical.

There is no pre-operative means of gauging the pathogenic culpability of the uvula in cases of marked susceptibility to the common cold. Neither its size nor any other observable characteristic affords a dependable index to the advisability of excision, for it has been found that an exceptionally small uvula may be a source of pronounced disturbance and that it is not the elongated type only that definitely contributes to lowered nose and throat resistance. Staphylectomy may therefore be considered a justifiable and advantageous procedure in practically all cases exhibiting aggravated catarrhal tendencies, its efficacy being determined by the thoroughness of the operation and not by the dimensions nor the consistency of the tissue removed.

Denunciation of this radical proposal may be dictated by popular prejudice, but a practical and reliable estimate of its alleged rationality and merits is readily available to every member of the profession. The means is extremely simple and clinical material everywhere abundant.

Staphylectomy is such a minor procedure that it hardly admits of a technical description. It exacts no unusual skill of the operator nor does it demand special facilities. The topical employment of cocaine, or larocaine (Roche), in sufficiently generous amounts renders the operation practically painless. The use of both hands being essential, it becomes necessary for the patient to manipulate the tongue-depressor, which he or she can be instructed to do even more expeditiously than a trained assistant. Active hemostatic measures have never been required, although the possibility of their need has at times been anticipated. Only a trivial amount of bleeding is ordinarily witnessed and spontaneous arrest usually takes place in from one to five minutes. In many instances there is practically no hemorrhage at all. Post-operative care is a negligible consideration, but patients have, when practicable, been kept under daily observation until the wound was fully healed. The importance of removing the uvula *in toto* cannot be too strongly emphasized, as no compromise between staphylotomy and *staphylectomy* will yield results clearly confirmatory of the original findings reported.

Superstitious aversion to complete removal of the uvula has for ages obscured the possibility of an epochal rhinolaryngological achievement, for only through the experimental

employment of staphylectomy would it be possible to glean the facts that are indispensable to success in the long attempted conquest of "colds" and related nose and throat disturbances. This obstructive prejudice, although universal, is entirely unwarrantable. Over two thousand staphylectomies have revealed not the slightest justification for it. In the hands of the writer the procedure in question long ago passed from the stage of experimentation to that of established clinical utility, the enormous scope of which will prove no less astounding to future investigators than it has in the course of this anomalous experience.

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INTESTINAL OBSTRUCTION CAUSED BY THE MESENTERY OF A MECKEL'S DIVERTICULUM.*

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1. The true or Meckel's diverticulum is due to the persistence or incomplete obliteration of the vitelline or omphalo-mesenteric duct.

It occurs in about 2 per cent of the bodies examined, and is more common in males than in females.

Other authors quote its occurrence in 4 to 6 per cent of abdominal cases coming to operation.

2. Cysts may develop from the vitelline duct, which up to the eighth week of embryonal life extends between the intestines and the yolk sac. If the duct remains patent, a congenital fstula, from which mucus and intestinal contents are discharged, persists after the cord separates.

If the umbilical end of the duct closes and the intestinal end remains open, a blind sac (Meckel's diverticulum), which empties into the ileum, persists.

If the intestinal end closes, and the umbilical end, from which the mucous membrane protrudes, remains open, an umbilico-vitelline diverticulum is formed.

If both extremities become closed but the intermediate part of the duct remains patent, a vitelline cyst (enterocystoma) forms as the secretion is poured out.

The walls of the cyst, like those of the fistulae and diverticula, are composed of regularly and irregularly arranged bundles of smooth muscle fibres.

They are lined with epithelium which corresponds histologically to either the adult or embryonal types of intestinal epithelium.

3. "The diverticulum is always single and arises from the ileum, from fifteen to forty inches above the ileo-cecal valve." In the majority of instances, Meckel's diverticulum is seen coming off from the ileum as a blind tube.

The length of the diverticulum varies from one to four inches; the average being about two and one-half inches. Cases have been reported in which the length was up to ten inches. In our case the tube measured four and one-half inches in length.



Fig. 1.—1. Mesentery of diverticulum. 2. Distended proximal ileum. 3. Point of constriction of bowel by mesenteric vessel. 4. Collapsed distal intestine. 5. Origin of diverticulum anti-mesenteric.

The symptoms of strangulation due to a Meckel's diverticulum are somewhat obscure; in fact, the correct diagnosis is rarely made before the abdomen is opened. Most cases are sent to hospital with the diagnosis of acute appendicitis, while a few enter with a diagnosis of intestinal obstruction.

Unless the pain and inflammation is near

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the umbilicus, it is practically impossible to make the diagnosis prior to operation.

4. C. Leo mentions depression of the umbilicus, as a symptom of ileus due to a Meckel's diverticulum.

The primary symptom is pain, which is apt to be followed by nausea or vomiting. If constriction of a loop of bowel occurs, distention and constipation will result, with inability to have bowels move, and unless the lesion is attended to early, death results from peritonitis, dehydration, and exhaustion.

Patient—J. P., age twenty-nine, sent to St. Joseph's Hospital 9:30 P. M., March 22, 1932, with diagnosis of acute appendicitis.

History was that at noon that day he was taken with sudden acute pain in the abdomen in region of the right lower quadrant, associated with nausea and vomiting.

Vomited several times during the day. Pain persisted, subsiding at times, but aggravated at other times.

Patient stated he had had discomfort in the abdomen, constipation, gas, feeling of fullness in the neighborhood of the appendix for some time. No previous appendix attack could be recalled, and no definite dyspeptic symptoms.

No genito-urinary symptoms.

Has had measles, mumps, whooping-cough. No pneumonia, typhoid fever, scarlet fever or diphtheria.

Personal habits good; leads a regular life, does not use tobacco or liquor, and drinks very little coffee, no tea.

Physical examination: Patient is thin, somewhat under weight.

Teeth, tonsils negative, thyroid not enlarged.

Lungs clear, dullness of heart area not increased, sounds clear, no murmurs, no irregularities.

Liver dullness not increased; gall-bladder not palpable nor tender; spleen negative. No herniae.

Abdomen slightly distended, especially lower half; tenderness to pressure over the appendix and about the umbilical region. Abdomen soft. No rigidity.

Tympany was increased on percussion to left of median line of lower half of the abdomen, and tinkling and high pitch resonance note in this region was made out by auscultation.

Examination of urine negative.

Blood N. P. N. 35 mgm. per cent. Sugar, .085 mgm. per cent. White blood cells 8,200. Polymorphonuclears 82 per cent. Lymphocytes 18 per cent. Temp. 101—rectal.

Had a small bowel movement the day he entered hospital shortly after the onset of pain, and passed some gas. No further movement of bowels and no passage of gas since. Diagnosis made of intestinal obstruction.

Patient was taken to operating room at 10 P. M. Anesthetic was gas and ether.

Abdomen opened. A Meckel's diverticulum was found in the ileum thirty-six inches from the ileo-cecal junction. The distal end of the diverticulum was free, having its own mesentery, the vessels from which were coursing over the intestine distal to the diverticulum, and coming off from the mesentery by way of a portion of the small gut beyond the diverticulum, the mesentery constricting the bowel and causing the obstruction.



Fig. 2.

The proximal portion of the intestine and diverticulum were very much distended, while the portion of the intestine distal to the mesenteric band was collapsed. Free clear serous fluid was found in the abdomen.

The vessels of the mesentery to the diverticulum were ligated and cut through close to their origin, which immediately relieved the obstruction. The diverticulum was then excised and the intestine closed over by suture.

As requested by patient, the appendix was then removed and the abdomen closed.

Patient returned to bed in good condition.

Convalescence was uneventful, patient making a complete recovery. Blood Wassermann

negative. X-ray visualization of gastro-intestinal tract before leaving hospital showed no further lesion.

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110 East North Avenue.

PREVENTABLE CANCER AND CURABLE CANCER AND THE VALUE OF ACCURATE MICROSCOPIC DIAGNOSIS IN THE OPERATING ROOM.*

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The following statements are based upon the report of this illustrated address by a very intelligent young reporter of the *Daily Press*, Newport News, Va. What appears in quotation marks are actual quotations from the written and printed statements of the reporter; anything that appears in brackets are additional statements of the writer or corrections.

"There is enough knowledge of cancer (today) to prevent cancer of the mouth, the skin and the cervix (of mothers) and to cure much (much more) of the other forms of cancer" . . .

. . . "The problem is one of education of the public and the continued education of the medical (and dental) professions. Contrary to the general belief, it is not only the average medical practitioner, but the specialist as well who needs education" . . .

. . . "A series of lantern slides, some showing sections of cancerous tissue and of non-cancerous tissue which had been believed to be cancerous and others showing views of cancers in various parts of the human body before removal." (This reporter grasped and recorded the most important statements when I showed my lantern-slide illustrations, especially the microscopic of border-line tumors so frequently diagnosed malignant when they were really benign. This is especially true of lesions of the breast due to chronic cystic mastitis, that is, we are making the same mistakes today with the microscope that Sir Ashley Cooper called attention to one hundred years ago when he stated that many of his colleagues removed the entire breast for tumors that were not cancer. I have just sent to a colleague of mine some reprints and references to the mistaken statements that chronic cystic mastitis is a precancerous lesion. The title of my colleague's paper is: The Evolution of Cancer from Benign Lesions of the Breast, Cystic and Papillomatous. In 1903, I unfortunately published an article entitled Senile Parenchymatous Hypertrophy (a then new name for chronic cystic mastitis) in which I stated that perhaps in 10 per cent of the cases malignancy was associated with, or started in, chronic cystic mastitis. In 1883 Réclus, of France, and in 1893 Schimmelbusch, of Germany, made the first original contributions in which they both expressed the opinion that chronic cystic mastitis was largely a precancerous lesion and that the chance of development of cancer was at least 50 per cent. Their two articles and mine were unfortunately accepted by the large majority of pathologists and surgeons of the world. An intensive study of my own between 1903 and 1920 led to the publication of a monograph in the *Archives of Surgery* (Vol. III. pp. 445-542) in which I presented evidence making my former statement in 1903 incorrect and disagreeing with the conclusions of Réclus. Schimmelbusch and the majority of writers on this subject since.

In the *American Journal of Cancer* (Vol. XVI, No. 1—January, 1932) I again presented the evidence based on a restudy of all these border-line cases that chronic cystic mastitis is not a precancerous lesion, and that there is no more reason to perform the complete operation for cancer or to remove one or more

*Written June 16, 1933. Address delivered before the Hampton Roads Medical Journal Club, Elizabeth Buxton Hospital, Newport News, Va., May 26, 1933.

breasts, than there is to do so for an encapsulated adenoma, or a normal breast. In a certain per cent of cases it may be necessary to explore the palpable lump or one lump in a lumpy breast for a biopsy. But when the biopsy shows chronic cystic mastitis, no further excision is necessary. It is so difficult in some cases, except for a specially trained pathologist, to differentiate certain microscopic pictures of chronic cystic mastitis from cancer, that it may be necessary for the surgeon to excise the suspicious zone only and request the pathologist to send sections to a number of surgical pathologists of known and outstanding experience with this disease.

In 1915 a majority of pathologists diagnosed this border-line lesion malignant. Fortunately, today the majority diagnose it benign. When two good pathologists disagree on the microscopic interpretation of a breast lesion, the chances are that it is not malignant. A reasonably well-trained pathologist practically never fails to recognize a cancer of the breast.

I advise the readers of this article to familiarize themselves with the illustrations in the *Archives of Surgery* (Vol. III, pp. 445-542) and in the *American Journal of Cancer* (Vol. XVI, No. 1, January, 1932).

"Accurate diagnosis of cancer was emphasized as of extreme importance and measures of accurate diagnosis which have been developed during the past few years were described. He said: No operation for suspected cancer should be performed without microscopic examination in the operating room which would enable the surgeon to determine definitely whether the actual cancer was present; if so, what type of cancer, and the exact method of treatment to be employed, and whether any treatment would be effective.

(This reporter grasped the full meaning and extent of my statement in regard to the value of frozen-section diagnosis in the operating room, because many of us today are using this not only for the diagnosis whether the mass is cancer or not, but of its grade of malignancy, and whether, in some instances, it would seem wiser not to do the complete operation, but try radium treatment first. The reporter did not grasp a statement in which I emphasized that we can use the frozen section to study the tissue passed through in exposing the palpable lump and to establish that the malignant disease has been given sufficient margin in its removal.)

"In addition, he emphasized the value of making more than one microscopic examination with different stains, citing cases (a case) where this had proved that suspected cancer was not cancer at all. (This was the first time I ever made this statement. A few weeks before it was made I examined a patient with a lump the size of a pea in the subcutaneous fat in the midzone of the outer hemisphere of the left breast. It felt too superficial to be in the breast itself. Yet, the little nodule did not have the connection with the skin almost always present in a dermoid. The nodule had been observed by the patient but two weeks. It was neither painful nor tender. The woman was over thirty-five, unmarried, and there was no palpable evidence of chronic cystic mastitis in either breast. That is, the breasts were neither shotty, nor lumpy, and there were no dilated ducts beneath either nipple. This little definite, palpable, single nodule transilluminated dark. This excluded a benign cyst or a colloid cancer, but did not exclude a definite cancer or a cyst containing a papilloma and blood, or a hemorrhagic area. The palpable area was excised under novocain with a good margin of tissue. The lump itself was buried in subcutaneous fat. The breast tissue cut through was normal. The gross section of the little lump did not suggest malignancy. The tumor was distinctly different from the surrounding fat; there was no capsule. It looked more like a gumma or an area of fat necrosis. The first frozen section stained rapidly and without any preliminary fixation had the cellular picture of cancer. All of my associates and special students in surgical pathology thought that it was cancer in spite of seeing one or more giant cells. We then made a frozen section with hematoxylin and eosin and recognized a cellular picture in which there was no evidence of malignancy, but of a cellular inflammatory lesion with numerous foreign body giant cells and fat necrosis. I am convinced that for these doubtful and border-line cases we must use today more than one stain. First, we will make a frozen section without fixation and stain it with one or more stains; then we will make a frozen section of a bit of tissue hardened by boiling in formalin or some other means. (We will continue to search for a differential stain). By this proceeding in this case we saved the

breast, performed a minor operation, closed the wound, and the patient left for home that afternoon by motor. Studies of stained fixed tissue confirmed the diagnosis of benignancy.)

(I was tremendously impressed that this layman, a newspaper reporter in a small town caught and recorded one of the most important statements in my lecture.)

"Showing a picture of an aged woman operated on for cancer," he said: "This is why some surgeons save so many more cancers than others. This woman did not have cancer at all." (This was the photograph of a woman taken in 1932 showing the result of the complete operation for cancer of the breast by Dr. Halsted in 1892. The woman had a large lump in the left breast and a retracted nipple. I am confident, from Dr. Halsted's description, that the breast was shotty, because he states that more than a hemisphere was involved; that the cancer mass had a distinct edge like a liver, and, in addition to induration, there were shotty nodules throughout. Dr. Welch made a definite gross description of what I later described and what Broedel painted in 1901, and which I published in 1903 as cancer in senile parenchymatous hypertrophy. Welch, in his written report, called it adenocarcinoma, and records that the glands were not involved. With one exception, all the women living in 1930 who were operated upon in Halsted's clinic in Johns Hopkins for lesions of the breast, were diagnosed then chronic cystic mastitis, or were chronic cystic mastitis diagnosed malignant.

One patient operated on in 1895, diagnosed by Welch as colloid cancer with metastasis to the glands, lived twenty years free from any recurrence, then developed a nodule in the apex of the axilla, which could not be completely removed because it involved and surrounded the vessels and nerves. This patient lived in comfort until 1930, fifteen years later. There had been treatments, first, by the ordinary X-ray machine, then deep X-ray therapy. Fifteen years, therefore, after the second operation there developed lymphoedema and paralysis of the arm. The arm was amputated for comfort in 1932, and the patient died of a secondary erysipelas contracted after leaving the hospital. Czerny, the great German cancer specialist and surgeon, stated that every large surgical clinic should see at least one spontaneous cure of cancer of the breast every fifty years.

I have demonstrated that the majority of women living today, apparently free from the disease, operated on more than thirty years ago on the diagnosis of cancer of the breast, did not have cancer. We have one patient living today, twenty-five years after operation for cancer of the breast, free from recurrence; the base and mid-glands had been involved. A re-study of the well-preserved sections proved this.)

"Dentists were invited to this meeting as well as physicians, and a special set of lantern slides for the dentists were shown. Dentists," he said, "are equipped by training for the treatment of mouth cancers (the earliest stages), but not so well equipped for diagnosis. For this reason, every Medical Arts building should house a pathologist, so that dentists should have available frozen sections. He showed a view of a diseased tooth which, as later developed, was cancerous, and the man died. In any case where there is a suspicion of cancer and," he said, "the symptoms of incipient cancer and certain other mouth diseases are identical, and microscopic examination is the only sure method of diagnosis, the dentist should take sections of the tissue or put the tooth in formaldehyde and send it to a pathologist for examination."

(I was attempting here, with lantern slides, to illustrate to dentists and physicians that ultimately all cases of malignant disease beginning in the region of the jaws, or in the lining of the mucous membrane of the mouth, will be seen by dentists first. Dentists should therefore be educated in the proper recognition of these lesions in their early stages. The first sign of a lesion of the jaw, whether malignant or not, is pain in the region of the tooth or the jaw, a loose tooth, a swelling of the gum, or a swelling of the jaw. The first thing to do is to take X-ray films of the teeth and larger X-ray films of the jaw from more than one direction, and of both sides for comparison. If these pictures show anything suspicious of malignancy, the next most important procedure is to get a microscopic diagnosis by a competent pathologist. This will be found fully described in the System of Surgery edited by Dr. Dean Lewis (vol. iv, chapter iv). Special articles are being published in the *Journal of the American Dental Association*, *the International Journal of Orthodontia*, *Oral Surgery and Radiography* and in

Dental Survey (June, 1933, page 32). I am trying to emphasize that the operating dentist requires more and more frequently the aid of a surgical pathologist, and where they are grouped together in a Medical Arts Building, there is no difficulty in obtaining it.)

(In doubtful cases there is no difficulty in dropping the extracted tooth in 10 per cent formalin and sending it at once to a pathologist who will scrape the tooth, make a section of the soft tissue adherent to it, and determine at once whether malignancy is present. In my experience, if a loose tooth is extracted from a malignant area, malignant tissue will be always attached to the tooth. The dentist, in such suspicious cases, after the extraction of the tooth, can cauterize the socket. There is a very efficient electric cautery which can be purchased for twelve or fifteen dollars. This cauterization is not painful and not harmful to healing.)

"Moles (pigmented)," he asserted, "represented a source of danger and should be removed during adolescence. He showed views of moles that had been neglected and had caused the patient's death from cancer, saying: 'When a mole begins to weep, it is time for the family to weep.'"

(This lantern-slide demonstration, which I gave in the beautiful library of the Elizabeth Buxton Hospital, is one that I have been arranging for at least ten years, attempting to improve it from time to time with new material. Its greatest pictorial and teaching value is when four lanterns and four screens are provided. This allows each statement to be illustrated by four pictures. The object is to contrast the little things in which cancer may develop, which the well-informed patient brings to his physician or dentist to see in time, with the same little thing neglected because of ignorance, and what it looked like after this dangerous delay).

"Cancer," he said, "is a local disease in the beginning, and, in fact, is not malignant in the beginning." He said, "a cell does not become malignant until it has passed through an intermediate stage which is also not malignant, yet, in this stage, can be recognized as an incipient cancer and successfully removed."

(It is on this fact, which is accepted by the majority, if not by all cancer students, that the hope of preventing cancer of the skin, the mouth, and the cervix in mothers, depends, and when we can educate all people to periodic examinations and reporting to their physicians or dentists the moment they are warned between such examinations, cancer will be displaced as a second cause of death to an insignificant position in the mortality statistics.)

"Continued health," he asserted, "depends upon continued medical supervision." (I got this statement, "continued medical supervision," from Professor Freeman, of the School of Hygiene and Public Health, of Johns Hopkins University.) "For example," he said, "every mother should have an examination six months after the arrival of every child, and this would enable the physician to check and cure cervical cancer in every case. Only 10 per cent of women (mothers) have this protection." He said, "when this examination showed a suspicious condition (of the cervix) the general practitioner should send the patient to a pathologist (specialist), and, if cancer is found, its type should be determined and the patient should be referred to the proper specialist (radiotherapeutist). "This course," he declared, "is followed in every case of suspected cancer." (I have the written opinion of more than one thousand fellows of the American College of Surgeons who specialize in obstetrics, gynecology or both, and many other specialists throughout the civilized world. With few exceptions they agree that the mother should be instructed during the post-natal stage on the importance of returning for a pelvic examination within six months or one year, and then at definite intervals depending upon the findings of the last examination. Practically without an exception any member of the medical profession should recognize, by a good light and a speculum, a suspicious cervix after the birth of a child. This patient can be at once referred to a gynecologist, or an obstetrician, in his office, or a clinic, or a dispensary, or a hospital. Then the decision as to the removal of a piece for microscopic study can be made. And, when the microscope reveals beginning cancer, radium offers more than 90 per cent of a cure. The best results today in the largest clinics of the world, after the best radium and X-ray treatment of cancer of the cervix, is less than 35 per cent. The chief, or perhaps, the only cause is delay due to ignorance.)

"The only reason it is not followed," he said, "is lack of organization." (There is no question that we have the knowledge today, the specially trained members of the medical

and dental professions, the pathologist for diagnosis, the skilled operators, the radiotherapeutists, sufficient radium and X-rays. What we lack is the education of more people and the better education and cooperative organization of the medical and dental professions. It is my opinion that the press at the present moment can be of the greatest help in the dissemination of this correct information, both to the public and to the professions, and when the women of this country really understand preventive medicine and the tremendous improvement in modern medicine, in diagnosis and cure, they will demand that their families and their communities be given the benefits of all these things, and there will be no difficulty in the medical and dental professions in meeting these new requirements.)

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STUDIES ON THE UTILIZATION OF DICALCIUM PHOSPHATE AND CALCIUM INOSITOL-HEXAPHOSPHATE BY RATS.

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Studies on the effect of dietary alkalinity on the absorption of calcium and phosphorus from the intestinal tract have not led to comparable results. Zucker, Johnson, and Barnett[1] have shown that an otherwise non-rachitic diet could be made rachitic by the addition of 2 per cent sodium carbonate. The alkali presumably prevented adequate calcium and phosphorus absorption through their precipitation as tricalcium phosphate in the intestinal tract. Sato[2] found sodium bicarbonate to have a detrimental effect on calcium assimilation by children. Telfer[3] believes that the absorption of calcium is dependent on the free acid of the gastric juice and tends to be retarded by the alkaline reaction of the intestinal juices. On certain diets the absence of vitamin D is known to cause an increased alkalinity of the feces of rats, and when the vitamin is again given the feces revert, at least temporarily, to a more acid reaction.[4-5-6-7-8-9] Shohl and Bing[10] found that although on certain diets the cure of rickets was associated with a change in the pH of the feces from alkaline to acid, such a change in the feces did not necessarily result when the rachitic lesions were cured with other diets.

Artificial acidification of the intestinal tract was found by Irving and Ferguson[11] to increase calcium absorption, at least, as measured by increase in blood calcium. Flood[12] obtained improvement in the rachitic condition of children by the administration of hydrochloric acid. Samuel and Kugelmas[13] have shown, however, that in the absence of vitamin D, rickets develops far more rapidly and more severely in rats when the diet is acid forming than when it is neutral or base forming. Brown et al[14] obtained similar results, and further showed that, although the acid-base balance is a factor in the development of rickets, the Ca : P ratio seems to play the most important role. Jones[15] found excess alkali in the diet to cause retrograde bone changes and development of rickets in puppies. Neutralization of the excess alkali initiated the healing process. On the other hand, Cole, Speer and Heyl[16] found base forming diets favored calcium and magnesium retention and also possibly phosphorus retention. Givens and Mendel[17] were unable to demonstrate any detrimental influence of sodium bicarbonate on calcium, magnesium and phosphorus retention in dogs. Farquharson et al[18] found a daily intake of 12 grams of sodium citrate had no unfavorable effect on calcium and phosphorus retention in adults.

The purpose of the present investigation was to compare the effect of marked dietary alkalinity on the utilization, by rats, of the calcium and phosphorus of dicalcium phosphate with that of an organic calcium phosphate compound. A commercial preparation known as calciphos was used for this purpose since its Ca : P ratio is approximately the same as that of dicalcium phosphate. It was felt that since the solubilities of these two substances in water of various hydrogen ion concentration are quite different, then, if absorption is primarily dependent on intestinal acidity, manifest differences in their utilization might be obtained. Comparative solubility determi-

nations at 37° in acetate buffer solutions gave the following results. Calcium values are expressed in milligrams per 100 c.c. of solution.

pH 7.6		pH 6.7		pH 6.0	
$CaHPO_4$	Calciphos	$CaHPO_4$	Calciphos	$CaHPO_4$	Calciphos
0.8	6.6	9.7	8.1	23.7	13.6

It will be seen that in the more acid solutions dicalcium phosphate is much more soluble than calciphos, while the reverse holds true in alkaline solutions. The acid acetate solutions were all prepared from a 10 per cent solution of sodium acetate by the addition of a small amount of acetic acid. In the case of the solutions of pH 7.6 the calcium salts were shaken with 10 per cent sodium acetate for six hours, after which the pH was adjusted to 7.6 by the addition of sodium hydroxide.

Calciphos is prepared from the steep-water of corn by the addition of a soluble calcium salt until precipitation occurs. It is theoretically a saturated calcium salt of inositol hexaphosphoric acid, but contains impurities. Chemical analysis indicates the following average composition: calcium 19.8 per cent, phosphorus 14.1, magnesium 2.5, nitrogenous substances 5.5 per cent. It contains traces of inorganic phosphates, is neutral in reaction, tasteless, and quite insoluble in water.

Diets: The various diets used were prepared from a stock diet having the following composition:

	Grams
Yellow corn meal	720
Meat meal	103
Dried milk	52
NaCl	5
KCl	2.5
Magnesium lactate	17.5

Some ferrous sulfate and trace of potassium iodide.

Dicalcium phosphate or calciphos was added to the stock diet in sufficient amounts to give an adequate calcium and phosphorus content. In the early experiments Wesson oil was added to the extent of 10 per cent of the diet so as to increase the fat content. This, however, was discontinued in the later experiments as it was found to slowly hydrolyze and react with the sodium carbonate used in some of the experiments. Diets 1, 2, 3 and 4 are calciphos diets. Diets 1 and 2 contained 10 per cent Wesson oil, but diet 2 contained in addition 2 per cent anhydrous sodium carbonate. Diets 3 and 4 are exactly comparable to diets 1 and 2, respectively, except that they contained no Wesson oil. Diets 5, 6 and 7 are dicalcium phosphate diets. Diets 5 and 6 contained 10 per cent Wesson oil, but diet 6 contained in addition 2 per cent sodium carbonate. Diet 7 is similar to diet 6 except that it contained no Wesson oil. The calcium content of the various diets varied from 426 to 516 mgms. per 100 grams of diet, the phosphorus content from 488 to 544 mgms. Five drops of cod liver oil per cage were fed daily.

Procedure: The rats, two in a cage were kept in round metabolism cages supported on large glass funnels, fine wire netting being placed underneath the funnels to retain the feces while the urine passed through to beakers underneath. Urine and feces were collected at weekly intervals. In collecting the urine the sides of the funnels were washed down with dilute hydrochloric acid and water to dissolve any precipitated salts adhering to the sides. The feces were collected in weighed beakers, dried in an oven at 110°, weighed, finely ground and mixed, after which aliquot samples were taken for analysis. Food consumption was determined per period. Any food spilt was usually collected with the feces and analyzed as such. In a few instances, where excessive amounts were spilt, it was reasonably well separated from the feces, dried at room temperature, weighed, and the weight subtracted from intake to obtain actual food consumption.

Method of analysis: Morris, Nelson and Palmer's method[19] was followed in the analysis of both food and feces. Urine, after acidifying if necessary, was diluted to a definite volume, filtered, and aliquots taken for analysis. Calcium was precipitated as the oxalate, using brom-cresol purple as indicator and adding ammonium hydroxide to a dirty gray color or approximately pH 5.8. Urine calcium was always low, and consequently any error from the presence of uric acid or other impurities is negligible in calculating calcium retention. Inorganic phosphate was determined by Fiske and Subbarow's[20] method. Since the amount or organic phosphates in urines is normally very low, it is felt that any error from this source is inconsequential in calculating phosphorus retention.

Discussion: It will be seen from the experimental results that the addition of 2 per cent sodium carbonate to the diets did not have any

detrimental effect on calcium and phosphorus utilization, except possibly in very young rats, (cage 3, Table 2). It is probable that even in this case the effect was due more to a diminished palatability of the diet than to an actual effect on calcium and phosphorus utilization, since these rats as well as those in cage 2, Table 2, tended to scatter their food. It was found impractical in these cases to separate completely the scattered food from the feces; consequently, the recorded per cent retention is too low. There was no marked scattering of food in any of the other experiments, even in those in which sodium carbonate was used. A considerable degree of rancidity developed in the Wesson oil diets; consequently, most of the sodium carbonate used in experiments 2 and 3, Tables 1 and 2, was converted into sodium soaps before the end of the experiments. This, although changing the true dietary alkalinity, did not affect the potential alkalinity. In experiments 4 and 5, Table 1, and experiment 4, Table 2, no fats were present except the small amount in the milk and meal. The sodium carbonate consequently remained unchanged in the diet, at least to a very great extent, during the course of the experiments.

A comparison of the data in Tables 1 and 2 shows a slightly greater rate of growth and calcium retention by the calciphos fed rats

TABLE 1

Effect of Sodium Carbonate on the Utilization of Calciphos by Growing Rats

Period	Average Weight, grams.	Cage	Average Daily Intake, mgms.		Average Daily Retention, mgms.		Per Cent Retained		Remarks
			Ca	P	Ca	P	Ca	P	
1	48	1	39	42	25	17	64	40	Diet 1 contained 10 per cent Wesson oil. No Na_2CO_3. Two male rats.
2	83	.....	53	57	35	23	66	58	
3	120	.....	56	60	34	22	61	37	
4	145	.....	62	66	39	29	63	44	
5	173	.....	63	67	40	31	63	46	
			Average.....		35	24	63	45	
1	46	2	37	40	24	20	65	50	Diet 2—same as above except that it contained 2 per cent Na_2CO_3. 1 male, 1 female rat.
2	78	.....	42	45	27	18	64	40	
3	91	.....	49	52	31	20	63	38	
4	115	.....	48	51	31	18	65	35	
5	138	.....	52	56	35	25	67	45	
			Average.....		30	20	65	46	
1	48	3	35	37	22	18	69	49	Diet same as in cage 2, 2 female rats.
2	77	.....	50	53	33	24	66	45	
3	101	.....	50	53	30	15	60	28	
4	119	.....	49	52	30	18	61	35	
5	135	.....	49	52	28	19	57	36	
			Average.....		29	19	63	39	
1	72	4	37	46	21	18	57	39	Diet 3 contained no Wesson oil or Na_2CO_3. 2 male rats.
2	105	.....	60	75	39	33	65	44	
3	141	.....	63	78	38	20	60	26	
4	173	.....	62	77	37	34	59	44	
5	206	.....	63	78	33	25	54	32	
6	223	.....	64	80	28	17	44	21	
			Average.....		33	24	56	34	
1	66	5	36	45	22	17	61	38	Diet 4—same as diet 3 except that it contained 2 per cent Na_2CO_3. 1 male, 1 female rat.
2	94	.....	51	64	35	33	69	52	
3	114	.....	52	65	34	20	65	31	
4	141	.....	61	75	34	31	56	41	
5	166	.....	59	73	33	26	56	36	
6	189	.....	65	82	27	21	41	26	
			Average.....		31	25	58	37	

over those of corresponding sex receiving dicalcium phosphate. The per cent retained was, however, approximately the same in both cases, indicating that either of these salts serves equally well as sources of calcium and phosphorus for growing rats. The absence of any detrimental effect of the alkali on the utilization of these salts is of interest in view of their different solubilities in water of various hydrogen ion concentrations. If one assumes that the hydrogen ion concentration of the intestinal tract is the most important factor in determining the solubility and absorption of calcium compounds, then dicalcium phosphate should be better utilized than calciphos when fed with normal diets, which presumably would give normal reactions of the intestinal tract. The negative effect of the alkali when fed with either salt may conceivably be due to the rats compensating for the excess alkali by increased acid excretion into the stomach, so that the reaction of the intestinal tract did not change. However, pH determinations of the feces on several occasions showed a distinct alkaline reaction in those receiving sodium carbonate and an acid reaction in those on the normal diet.

Since these two salts are equally well utilized from both normal and markedly alkaline diets, in spite of their different solubilities in water solutions of various hydrogen ion concentrations, one must assume that there are other factors, beside the pH of the intestinal tract, which are important in determining their solubility in, and absorption from, the intestines. Some of these factors are possibly bile, fatty acids and inorganic salts.

TABLE 2

Effect of Sodium Carbonate on the Utilization of Dicalcium Phosphate by Growing Rats

Period	Average Weight, grams.	Cage	Average Daily Intake, mgms.		Average Daily Retention, mgms.		Per Cent Retained		Remarks
			Ca	P	Ca	P	Ca	P	
1	42	1	31	33	22	18	71	54	Diet 5 contained 10 per cent Wesson oil. No Na_2CO_3. 2 male rats.
2	61	.....	39	41	25	23	64	56	
3	85	.....	47	50	30	26	64	52	
4	112	.....	46	49	28	22	61	45	
5	.....	.....	47	50	32	25	68	50	
6	153	.....	50	53	35	29	70	55	
			Average		29	24	66	52	
1	40	2	48	50	31	25	65	50	Diet 6—same as above except that it contained 2 per cent Na_2CO_3. 1 male, 1 female rat.
2	63	.....	49	51	23	31	47	60	
3	74	.....	37	39	27	16	73	41	
4	87	.....	44	47	23	13	52	28	
5	.....	.....	47	50	24	16	51	32	
6	116	.....	50	53	30	20	60	38	
			Average		26	20	58	41	
1	29	3	28	29	18	10	64	34	Diet same as in cage 2. 2 female rats.
2	48	.....	35	37	7	9	20	24	
3	59	.....	39	41	21	13	54	32	
4	76	.....	44	47	19	13	43	28	
5	.....	.....	49	52	26	16	53	31	
6	109	.....	43	46	31	21	72	46	
			Average		20	14	48	32	
1	58	4	32	39	21	16	66	41	Diet 7 contained no Wesson oil, but contained 2 per cent Na_2CO_3. 1 male, 1 female rat.
2	77	.....	42	51	27	24	64	47	
3	100	.....	51	62	33	18	65	29	
4	123	.....	49	59	28	18	57	30	
5	146	.....	56	68	35	33	62	48	
6	167	.....	52	62	20	17	38	27	
			Average		27	21	59	37	

Summary

It has been shown that a saturated calcium salt of inositol phosphoric acid serves equally as well as dicalcium phosphate as a source of calcium and phosphorus for growing rats.

Addition of sodium carbonate to the extent of 2 per cent to the diet did not appreciably, if at all, affect calcium and phosphorus utilization.

Note.—The calciphos was supplied by Dr. T. B. Wagner, New York City. A part of the investigative expenses was met by a grant from the Valentine Research Fund of our institution.

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Mother's Day.

The Maternity Center Association announces that an important step forward in the effort to save mothers' lives will be taken in 1934. Mother's Day—May 13th—is to be observed throughout the country by local groups determined to know precisely what their own maternal facilities are; how they can be improved; how to improve them. Forms for making local surveys to appraise what exists and suggest improvements are available on application to the Maternity Center Association, 1 East 57th Street, New York City.

Woman's Auxiliary, to the Medical Society of Va.

President—Mrs. William Lett Harris, 1112 Matoaka Street, Norfolk.

President-Elect—Mrs. Joseph Bear, 3012 Monument Avenue, Richmond.

Recording Secretary—Mrs. Fletcher J. Wright, 49 South Market Street, Petersburg.

Corresponding Secretary—Mrs. Charles A Saunders, 1000 Gates Avenue, Norfolk.

Treasurer—Mrs. Reuben F. Simms, 2034 Park Avenue, Richmond.

Executive Board Meeting.

The mid-winter executive board meeting of the Woman's Auxiliary to the Medical Society of Virginia, met Friday, February 23, 1934, at eleven-thirty in the morning, in Norfolk, at the home of the President, Mrs. William Lett Harris.

The meeting was opened by a prayer by Mrs. Harris, followed by roll call. There were twenty-three present—nineteen board members and four members of State committees.

The Treasurer, Mrs. R. F. Simms, reported a balance on hand of $81.23. She asked that State dues be sent to her this year by September 15th.

The Corresponding Secretary, Mrs. C. A. Saunders, reported that several letters had been sent out by her.

The Organization Chairman, Mrs. Joseph Bear, reported that two new Auxiliaries had been organized, one in the Mid-Tidewater section, with Mrs. Hawes Campbell as President, and the other in Lynchburg, with Mrs. F. O. Plunkett as President. The Mid-Tidewater Auxiliary will hold its first regular meeting later in the spring.

Mrs. C. L. Harrell, State *Hygeia* Chairman, read an excerpt from the January news letter of the A. M. A. Auxiliary, in which the President, Mrs. James Blake, stressed the practical value of *Hygeia*.

The Revisions Chairman, Mrs. E. L. Lowenberg, recommended that additional copies of the State Constitution be made for the benefit of new Auxiliaries. Mrs. Bear made this a motion, seconded by Mrs. Southgate Leigh. It was suggested that these copies be mimeographed ones, and the Chairman of Printing, Mrs. H. R. Drewry, was so instructed.

The Publicity Chairman, Mrs. W. T. Sanger, sent word to the meeting that she would like to have news from each Auxiliary by the 12th of each month.

Mrs. C. J. Andrews, Courtesy Chairman, reported that she had written one letter of condolence, that to Mrs. Kirkland Ruffin, after the death of Dr. Ruffin. Dr. Ruffin was a Past President of the Medical Society of Virginia.

In connection with the exhibit work, Mrs. Harris read a letter from Mrs. Miner, National Chairman of Exhibits, asking that any outstanding piece of work be displayed at the National Convention.

The Chairman of the Junior Auxiliaries, Mrs. Franklin Wilson, reported that she had attempted to organize a Junior Auxiliary in Richmond, but they were not ready to form an Auxiliary at this time. She commended the Norfolk Junior Auxiliary for its help at various functions.

Reports of County Presidents

Richmond. Mrs. J. B. Stone, President, reported a luncheon given by the Richmond Auxiliary to the five-point children of the State when they met in

Richmond. She reported that sixteen school children were furnished milk last year, and that this work would be continued.

Petersburg. Mrs. Philip Jacobson, President, reported a linen shower, sponsored by the Auxiliary, to the Post-Graduate Society, in which $800.00 worth of linen was furnished the hospital. She said that the Auxiliary hopes to make this an annual event.

Norfolk. In the absence of the President, Mrs. J. B. Abbitt, the President-elect, Mrs. E. L. Lowenberg, reported that draperies had been hung in the Medical Society auditorium by the Auxiliary, that two indigent cases had been helped, and that through the Public Relations Chairman, health movies were being given before other women's organizations.

Newport News. Mrs. W. S. Snead, President, reported a health lecture given in the public schools, the sponsoring of pre-natal work, the furnishing of layettes, and work with visiting nurses (T. B. cases mostly). She also reported that the Auxiliary had given out garments to storm sufferers. Mrs. H. W. Potter reported that from $50.00 to $90.00 would be realized from a moving picture sponsored by the Auxiliary.

Hampton. (Elizabeth City County Auxiliary). Mrs. J. J. Cullinan, President, reported that because of few members, the Hampton group would like to work in connection with the Warwick County Auxiliary (Newport News). After discussion, it was decided that this could be done.

Mid-Tidewater Group. Mrs. Hawes Campbell, President, asked for suggestions, and reported that she was getting organized for the first regular meeting in April.

A motion to accept the reports of the standing committee chairmen and county presidents was made by Mrs. C. J. Andrews, seconded by Mrs. H. R. Drewry, and carried.

The President announced that the A. M. A. Convention would be held in Cleveland, Ohio, June 11-14, 1934, and urged all who could to go. She appointed the following delegates: Mrs. Southgate Leigh, Norfolk; Mrs. Joseph Bear, Richmond, and Mrs. J. B. Stone, Richmond.

Mrs. Harris introduced the President of the Woman's Auxiliary to the Southern Medical Association—Mrs. Southgate Leigh.

Mrs. C. A. Saunders read the suggested outline of work which Mrs. Leigh had given at the Post-Convention Board meeting of the Woman's Auxiliary to the Southern.

A recommendation from the Woman's Auxiliary to the Southern that a Jane Todd Crawford Chairman be appointed in each State, was presented as a motion by Mrs. M. N. King, seconded by Mrs. Saunders, and carried.

Each Auxiliary was requested to hunt up and send in information desired by the Historian of the State.

The recommendations from the A. M. A. Convention for the State Auxiliaries were read by Mrs. M. N. King. (August, 1933, VIRGINIA MEDICAL MONTHLY.

THE RECOMMENDATIONS FROM A. M. A.

That each State appoint an Exhibit Chairman.

That Education Chairmen be appointed in all States, and that these chairmen study their duties in the Handbook.

That upon the payment of one dollar a year, the News Letter be sent to all County Presidents and Education Chairmen.

That the Study Envelope be published for the coming year to the extent of the budget.

That the Treasurers be more careful in returning the slips to the National Treasurer.

That the installment and use of filing cards be stressed in all Auxiliaries.

That the Auxiliaries inform themselves about the State and County Boards of Health.

That speakers' bureaus be formed by lay men and women who may be called upon to speak before groups on health programs.

That essay contests be held in schools, and given public recognition through the broadcast and the newspapers, and that physicians be the judges in these contests. That each State have a scrapbook.

The State Convention, to be held in Alexandria, October 9-11, was announced. After consideration, it was decided to plan all business meetings for one day, and to invite the Washington Auxiliary to attend meetings and to suggest speakers.

County Presidents were requested to appoint delegates to the State Convention, at the last meeting of each Auxiliary this spring.

The Chairmen of Standing Committees and County Presidents were instructed to send annual reports dated from April 1, 1933, to April 1, 1934, to the State President, by April 15th.

Mrs. Harris announced that the next State Executive Board meeting would be held in Alexandria, immediately preceding the regular annual meeting.

The Program and Health Chairman, Mrs. Southgate Leigh, introduced Dr. Thornhill, who presented two moving pictures on health topics. One advocated a yearly health examination, the other explained proper food and dieting. Both were most interesting. These moving picture films were loaned by the Metropolitan Life Insurance Company.

There being no further business, the meeting was adjourned.

Mrs. Harris then invited the board members and guests to luncheon at her home.

Respectfully submitted,

ALICE MOSS JONES,
(MRS. T. ELMORE JONES),
Acting Secretary.

The Milbank Memorial Fund

Announces that a plan of medical care for the American people, providing for more extensive prevention and treatment and more adequate payment for private physicians, will be proposed for public consideration as the result of their present studies. It is stated that this is being done on account of the unfinished work of the Committee on the Cost of Medical Care. Groups of physicians, dentists, nurses, and other experts are assisting the Milbank staff and boards of counsel, which also include many physicians, in the task of outlining the proposed program. The results of these studies and the new proposals will be published during this year.

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Agnes V. Edwards, Richmond, *Business Manager*

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Volume 61 APRIL, 1934 No. 1

Editorial

The Best Paid Man in the World.

The physician is the best paid man in the world. He is required to have an education which will be a benefit and a comfort to him all the days of his life. He wins a degree and he attains the honorable title of doctor. He learns to know more intimately his fellow man than anyone else can know his fellow. He gets praise for many things that he does not deserve and providence and disease are blamed for his mistakes. He wins the gratitude of those he serves. His charity work is invaluable to his experience. If he is reasonably conscientious and works reasonably hard he builds a practice that will insure him a good house, office and automobile and enable him to rear and educate a family and to stand the losses of the inevitably foolish investments he makes. If he has taste for invention there are innumerable unknown instruments and improvements awaiting him. If he wishes to discover, the laboratory is ready for him. If he likes research the facilities and libraries are available. If he craves adventure insidious dangers lurk around him and there are ever pioneer fields to enter. In his endeavors his government, his community and his fellow physicians stand ready to aid him. He is an advocate without a jury, a judge without a court, a minister without a surplice, a business man without guile, a farmer whose soil is the human body and whose crops are human health and happiness and he is a laborer without a boss. The physician is the best paid man in the world.

Beverley R. Tucker.

Dr. Tucker's remarks summon us to a sound way of thinking at a time when a threatened state license tax upon physicians has directed the thoughts of most of us to our pocketbooks, to our material rather than our spiritual position. His reflections challenge us to fresh adventures in contentment and happiness at a time when the hue and cry is loudest against the unfairness of expecting physicians to care for the indigent sick, to teach in state supported schools, and to minister to patients in clinics and hospitals—all without remuneration.

It can hardly be doubted that the American physician is the victim of an archaic method of handling one side of the community's obligation to the poor and unfortunate. In Russia where the new order has revolutionized medicine the slogan is "To Hell with Charity." Will the New Deal in this country see a saner conception of the relation of medicine and the physician to the care of the indigent sick? Until readjustment comes perhaps we do well to accept Dr. Tucker's appraisal of our status.

The Treatment of Peptic Ulcer.

Medical literature during the past year has been particularly full of new approaches to

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the vexing problem of how to cure ulcers of the stomach and duodenum, and fresh evaluations of some of the more recently advocated measures have appeared from time to time.

Milk protein injected intramuscularly has had its advocates. Other foreign proteins have been given intravenously. Therapy of this type is based upon the theory that ulcer formation is due to the reaction of certain sensitized cells in the gastric mucosa to some specific antigen. The bacterial theory of the origin of ulcer has dictated its own therapeutic approach, which consists in the scrupulous removal of all demonstrable foci of infection and the building up of immunity through "ulcer vaccines." The vaccines are advocated in graduated bi-weekly doses over a period of from eight to ten weeks. Diathermy has been employed and favorable results reported. Applied to the cervical vagus and sympathetic nerves for thirty minutes in from five to fifteen treatments relief of symptoms is to be expected. The effect of such penetrating heat upon the vagus is said to be conveyed to the stomach where relaxation and lowered irritability follow. At the same time sympathetic tone is improved.

In methods aimed at reducing the sodium chloride intake and at the withdrawal of gastric juice the problem has been attacked from still another angle. In following this approach sodium chloride ingestion is kept below 1.2 gm. a day, while a permanent catheter in the stomach constantly drains away the gastric juice. Injection of salyrgan still further decreases the body chlorides through diuresis. Hardly less drastic is the continuous alkalinized milk drip by which through a retained stomach tube milk containing 5 gm. of bicarbonate of soda to the litre is allowed to run into the stomach at the rate of thirty drops a minute. Excellent results are reported from this procedure which is obviously aimed at the perplexing problem of constantly keeping down gastric acidity.

Mucin was enthusiastically advocated several years ago as an ideal antacid which possessed soothing, protective and lubricating properties. Recent reports emphasize the complaints of patients over its disagreeable, often nauseating taste, its failure in a number of instances to give even symptomatic relief, and the relapses that have disappointed those who were initially benefited. There still appears to be use for mucin in selected cases, but it should be employed in conjunction with the older standard methods of therapy.

Metaphen in the hands of certain investigators is said to relieve symptoms and cause disappearance of ulcers. Its action is thought to be bactericidal, but a drug which is 56 to 57 per cent mercury should not be given continuously and in large doses without due consideration of its possible toxic effects. The daily intravenous injection of .5 gm. of sodium benzoate has caused the subsidence of the typical ulcer symptoms, and okrin, the water soluble alcohol precipitable fraction of okra pods, when given in teaspoonful doses has been shown to accomplish the same results.

In a recent issue of *The American Journal of Surgery* (February, 1934), Felix Cunha reports favorable results from the intravenous use of Synodal administered every fourth day for ten doses. This preparation is a combination of lipoproteins and emetine. The proteins have been shown to lessen gastric peristalsis and to relieve spasm at the pylorus They have been thought to induce hyperemia of the gastric mucosa and to thus favor ulcer healing. Emetine is excreted slowly, is held to relax smooth muscle and pyloro-spasm, and is considered effective for its bactericidal properties at the site of the ulcer.

It is important to accept all reports of this character guardedly, remembering that they are still in the experimental stage. For the present, such methods of therapy should be restricted to carefully controlled patients.

A Virginia Medical Manuscript.

The Library of the College of Physicians of Philadelphia has recently been enriched by the acquisition of an important Virginia medical manuscript—John Mitchell's account of yellow fever as it existed in Virginia in 1741-42. Benjamin Rush carefully read this communication of Dr. Mitchell's, declaring: I "paused upon every sentence; even words in some places arrested and fixed my attention." Acting upon the information thus obtained he developed his treatment of yellow fever characterized by copious bleeding and heroic purgation. John Mitchell lived at Urbanna, Va., and cut quite a figure in his day, being known both in this country and in Europe as a physician, naturalist, cartographer and historian.

Exeunt Pompholyx and Eczema.

Advances in our knowledge of the dermatomycoses—the role of the fungi in remote as well as local manifestations of skin disease—

threaten among other things the position of pompholyx. Many dermatologists at present doubt the existence of such a clinical entity. Lesions once regarded as typical pompholyx are now explained as the allergic manifestations of a distant fungus implantation.

From time immemorial physicians have thrust into a pigeon hole labelled eczema all dermatitis of unknown origin, and the disease has assumed enormous importance in dermatological thinking. From this vulnerable position recent medical progress threatens to tumble it. Encroachment has come from at least two directions. In the growing recognition of the importance of the dermatomycoses it has become apparent that many cases of ringworm formerly masqueraded as one of several types of eczema. Fungus infections are easily the most common skin diseases encountered today. Another large group of skin diseases once classified as eczema are now properly attributed to allergic sensitization of the skin to foreign proteins in food, drugs and a host of environmental contacts. By such encroachments eczema as a skin disease has lost caste, but until there are no longer cases of dermatitis whose etiology is unrecognized use will still be found for that much abused term.

Department of Clinical Education of the Medical Society of Virginia

Courses in Prenatal and Postnatal Care Begin in the Valley.

Although the fewer than one hundred physicians in the counties of the northern Valley constitute a smaller professional population than that of the usual area for circuits of postgraduate classes in prenatal and postnatal care, five centers with a prospective enrollment of average size have been arranged by the Joint Committee on Prenatal and Postnatal Instruction. Dr. M. E. Lapham, of Philadelphia, the Field Clinician of the Joint Committee, begins his work in Harrisonburg, Luray, Front Royal, Woodstock and Winchester in the week of March 26th.

At the time the course was offered to the physicians, only two organized medical societies were concerned. The Rockingham County Society unanimously approved the course and authorized the president, Dr. N. M. Canter, to appoint a committee to take charge of local arrangements and to have the responsibility of furnishing clinical material. The Medical Society of Northern Virginia, at its meeting on November 20th, also unanimously approved the organization of the classes and committees representing each of the six counties concerned were appointed by the president, Dr. E. C. Stuart. Members of the newly organized Shenandoah County Medical Society have accepted the course as a valuable means of strengthening their unit.

In advance of the opening date groups of fair size have been established by these committes in Harrisonburg, Front Royal and Winchester. The definite organization of others was not so far advanced, but indications of interest on the part of many physicians with whom the Joint Committee was in communication warranted the expectation that future enrollments would be sufficient to justify these centers of instruction. The usual average of more than half of the physicians who are accessible to the centers and are practicing obstetrics will doubtless be maintained.

These courses of ten weeks in length will extend from the last week in March through May. They bring to a total of fifty the courses conducted in Virginia for the Joint Committee by Dr. Lapham, courses which have enrolled 600 physicians.

The schedule of meetings, with the committees in charge and with the advance enrollments, follows:

Harrisonburg: The class meets on Mondays at 12:30 P. M. in the classroom of the Nurses' Home, Rockingham Memorial Hospital. Local committee in charge of membership and clinical material: Drs. A. C. Byers, B. S. Yancey and W. W. Koontz. Advance enrollments: Drs. H. Armstrong, B. H. Beydler, A. C. Byers, F. L. Byers, W. F. Fahrney, W. W. Koontz, M. T. McCulloch, J. D. Miller,

R. L. Shuler, J. E. Wine, Charles Watson, and B. S. Yancey.

Luray: The class meets on Tuesdays at 2:30 P. M. in the Courthouse. Local committee in charge of membership and clinical material: Dr. George H. Long. Advance enrollments: Drs. F. Thos. Amiss and G. H. Long.

Front Royal: The class meets on Wednesdays at 10:00 A. M. in Mrs. Johnson's Woman's Hospital. Local committee in charge of membership and clinical material: Dr. D. M. Kipps. Advance enrollments: Drs. C. H. Armentrout, E. W. Brown, O. W. Carper, Meyer Cohen, E. L. Grubbs, L. F. Hansbrough and D. M. Kipps.

Woodstock: The class meets on Thursdays at 3:00 P. M. in the Courthouse. Local committee in charge of membership and clinical material: Dr. C. H. Spiggle. Advance enrollments: Drs. George Crawford, L. C. Haynes, Harold Miller, Geo. W. Parrott and C. H. Spiggle.

Winchester: The class meets on Fridays at 3:00 P. M. in the Winchester Memorial Hospital. Local committee in charge of membership and clinical material: Drs. B. B. Dutton and C. O. Dearmont. Advance enrollments: Drs. L. M. Allen, C. R. Anderson, P. W. Boyd, R. F. Cline, C. O. Dearmont, B. B. Dutton, Thomas Gibson, J. E. Harris, C. H. Iden, J. A. Miller, H. I. Pifer, E. B. Powers, F. E. Tappan and T. A. Williams.

Post-Graduate Courses Win Approval Again.

The comments solicited from each member of Dr. Lapham's classes in prenatal and postnatal care are at this writing being received from the six Peninsula groups. All of them have revealed the same marked approval and testimony of value received that have been accorded the courses by previous members. The number of those who have rated the lectures of the course excellent or good is forty-two times as large as those who rated them lower; the ratio of those who considered the course worth the time and money expended, as opposed to those who did not, is forty to one; and the ratio of those who desire similar courses in the future is twenty-six to one who is uninterested.

Seventeen Weeks to the End.

The appropriation made by the Medical Society at the Lynchburg meeting, with the addition of part of the previous allotment of the Commonwealth Fund which would ordinarily have reverted, provides for the continuance of the program of prenatal and postnatal instruction until October 1st. Exactly seventeen weeks of Dr. Lapham's service remain for assignment. The medical societies and individual physicians in the northeast territory, extending east from the mountains and south to Fredericksburg, have been notified that arrangements will be made for courses to be conducted in their territory if it is desired. The next circuit will start in the week beginning June 4th.

George W. Eutsler,
Secretary, Joint Committee.

Proceedings of Societies

Virginia State Board of Medical Examiners.

At the meeting of the State Board of Medical Examiners in December, the following received licenses to practice medicine in this State:

Dr. Albert Victor Anderson, Portsmouth, Va.
Dr. John B. H. Bonner, Powhatan, Va.
Dr. Paul Douglas Camp, Jr., Richmond, Va.
Dr. William Gayle Crutchfield, Richmond, Va.
Dr. William Lloyd Eastlack, South Boston, Va.
Dr. Charles Louis Gilbert, Richmond, Va.
Dr. Robert Orrus Glenn, Valle Crucis, N. C.
Dr. William H. Gordon, Baltimore, Md.
Dr. John Edward Hamner, Richmond, Va.
Dr. Lynwood G. Houser, East Radford, Va.
Dr. Ellsworth Julian Johnson, Winchester, Va.
Dr. William Reily Jordan, Richmond, Va.
Dr. Alice Hege Keissling, Falls Church, Va.
Dr. James Henry Nelson, Jr., Hinton, W. Va.
Dr. Edward B. Richey, Lynchburg, Va.
Dr. David Herman Rosenfeld, Richmond, Va.
Dr. Carl William Shaffer, Alexandria, Va.
Dr. Norman Eric Tylar, Petersburg, Va.
Dr. Claude M. Vaughan, Russell, Ky.

The Medical Society of Northern Virginia

Held a called meeting in Winchester, Va., February 9th, upon the request of Dr. Southgate Leigh, Norfolk, chairman of the Committee on Group Societies of the Medical Society of Virginia. The president, Dr. George Crawford, of Strasburg, presided. After Dr. Leigh had appeared before the Society and urged the formation of county units, the fol-

lowing resolution was passed: "Resolved, That Skeleton County Societies be formed in each county which held membership in the Medical Society of Northern Virginia and that the President of the Medical Society of Northern Virginia appoint a Provisional President in each county and he in turn appoint his own secretary in his respective county. These Provisional officers are to serve until the next regular meeting of the Medical Society of Northern Virginia, at which time said appointments may be confirmed by the Society in regular session."

The Provisional officers appointed for the respective counties are as follows:

Clarke: Dr. C. O. Dearmont, White Post.
Warren: Dr. D. M. Kipps, Front Royal.
Shenandoah: Dr. W. C. Ford, Woodstock.
Frederick: Dr. H. H. McGuire, Winchester.
Rappahannock: Dr. J. G. Brown, Woodville
Page: Dr. George Long, Luray.

J. Edward Harris,
Secretary.

Joint Meeting.

The Fauquier County Medical Society and the Loudoun County Medical Society held a joint meeting in Warrenton, Va., on the evening of February 15th, as guests of Dr. J. Frank Folk and Dr. Martin B. Hiden. All doctors, druggists and dentists in that section of the State were invited and requested to bring one lady guest each.

The president, Dr. John T. Sprague, Warrenton, presided over the business session and Dr. M. B. Hiden, also of Warrenton, was at the secretary's desk. Several of those present spoke with regret of the death of Dr. B. H. Swain, of Ballston, and a committee composed of Dr. W. O. Bailey, Dr. G. Frank Simpson and Dr. M. B. Hiden was appointed to draw up resolutions on his death.

Dr. Hiden spoke of the question of the license tax on doctors which had been proposed by the State Legislature and a resolution was unanimously passed condemning this tax and requesting the legislators representing this section to oppose it. After discussion of several other matters, supper was served. This was followed by a dance which lasted for several hours.

Lee County Medical Society.

Officers of this Society for the year 1934 are as follows: President, Dr. W. J. Innes, Pennington Gap; and secretary, Dr. J. B. Muncy, also of Pennington Gap.

Southside Virginia Medical Association.

The one hundred twenty-first quarterly session of this Association convened in the lecture hall of the Medical Centre at the Central State Hospital on the afternoon of March 13th. A full attendance was present and a very interesting and instructive program was rendered. A delightful buffet supper, served by Dr. H. C. Henry and his staff, was enjoyed by the visiting doctors. The society then adjourned and will hold its mid-summer meeting on the second Tuesday in June.

Dr. H. C. Jones, Petersburg, is president, and Dr. R. L. Raiford, Franklin, secretary.

News Notes

Our Alexandria Meeting.

The Alexandria Medical Society has appointed the following committees and chairmen to look after the various details in connection with our sixty-fifth annual meeting to be held in Alexandria, Va., October 9th, 10th and 11th:

General Chairman, Dr. S. B. Moore.
Vice-General Chairman, Dr. H. A. Latane.
Publicity, Dr. L. Powell.
Golf, Dr. W. T. Burch.
Finance, Dr. W. E. Beattie.
Scientific Exhibits, Dr. C. L. Fifer.
Commercial Exhibits, Dr. H. A. Hornthal.
Hotels and Meeting Hall, Dr. O. A. Ryder.
Automobiles and Reception, Dr. J. W. Love.

The George Mason Hotel will be headquarters for our meeting. Though other rooms are available, it is suggested that members make reservations as promptly as possible, by writing direct to the hotel. This will avoid a last minute rush. Rates quoted by the George Mason are:

Single room—double bed, running water and toilet, $2.00 per day per person.

Single room—double bed, shower bath, $2.50 per day per person.

Single room—double bed, tub bath, $3.00 per day per person.

Double room—double bed, running water and toilet, $3.00 per day for two persons.

Double room—double bed, shower bath, $3.50 and $4.00 per day for two persons.

Double room—double bed, tub bath, $4.00 and $5.00 per day for two persons.

Double room—twin beds, tub bath, $5.00 and $6.00 per day for two persons.

The Clinch Valley Medical Society

Will hold its Spring meeting in Norton, Va., on April the 28th. An interesting program has been arranged including an address by the President, Dr. J. M. Daugherty, Nickelsville, and papers by Dr. N. W. Stallard, Dungannon, and Dr. James P Williams, Richlands. Dr. J. Shelton Horsley and Dr. Douglas G. Chapman, both of Richmond, Va., will be invited guests and will appear on the program. Dr. C. B. Bowyer, Stonega, is secretary.

The Tri-State Hospital Conference,

Composed of the North and South Carolina and Virginia Hospital Associations, will meet at Charlotte, N. C., beginning on the night of Wednesday, April 18th, and running through to noon of Friday. April 20th. In addition to papers prepared by members of the several associations there will be speakers from a distance. One of the subjects to be given considerable attention will be hospital insurance. Attendance from all hospitals is invited.

Dr. L. E. Jarrett, Memorial Hospital, Richmond, is secretary of the Virginia section.

Dr. Allen Freeman to Succeed Dr. W. H. Frost.

Dr. Wade Hampton Frost will retire as dean of Johns Hopkins School of Hygiene and Public Health, upon expiration of his term in July, after which he plans to devote his entire time to his duties as professor of epidemiology.

Dr. Allen Weir Freeman, professor of public health administration at Johns Hopkins will succeed Dr. Frost as dean.

Both Dr. Frost and Dr. Freeman are natives of Virginia and have been engaged in health work for a number of years—Dr. Frost formerly with the U. S. Public Health Service and Dr. Freeman with health work in Virginia and Ohio.

Medical College of Virginia News.

The regular scientific monthly meeting of the staff of the college was held Thursday, March 8th. The program was as follows:

Gangrene, by Dr. G. Paul LaRoque.

Acidosis and Alkalosis, by Dr. Frank L. Apperly with the discussion opened by Dr. J. C. Forbes.

The Stuart McGuire lectures, by Dr. Frank C. Mann, professor of experimental surgery, The Mayo Foundation, Rochester, Minn., with which will be combined the annual spring post-graduate clinics of the College, will be held April 2nd and 3rd. It is expected that a large number will be present for these lectures and clinics.

The monthly report for the out-patient department shows 4,606 patient visits for the month of February.

Dr. Harry Bear, dean of the school of dentistry, Dr. Arthur P. Little, professor of prosthetic dentistry, and Dr. S. F. Bradel, assistant professor of crown and bridge prosthesis, attended the annual meeting of the American Association of Dental Schools in Chicago, March 18th-20th.

Dr. W. E. Bundy, of Minden, W. Va., class of '08, was a recent visitor to the college.

Dr. Seth Gayle, class of '27, is now located at Scottfield, Ill., with the army air corps. He was a recent visitor to the college.

News From University of Virginia, Department of Medicine.

At the meeting of the University of Virginia Medical Society on February 19th, Dr. W. H. Goodwin spoke on the subject of Subcutaneous Injury of Intra-Abdominal Organs by Blunt Forces; Dr. Alfred Chanutin spoke on Studies on Partially Nephrectomized Animals.

At the meeting on March 5th, Dr. E. L. Corey spoke on the subject of Physiology of the Mammalian Fetus; Dr. E. P. Johnson spoke on Etiology and Histogenesis of Leucosis in Fowls.

New York Polyclinic Medical School and Hospital.

Special lectures and papers were presented in March at New York Polyclinic Medical School and Hospital, as follows:

Wednesday, March 14th, a special lecture by Dr. Russell L. Cecil (Professor of Internal

Medicine, New York Polyclinic Medical School and Hospital) on Rheumatic Fever: Incidence and predisposing factors. The role of the streptococcus in rheumatic fever. Focal infection. Relation of rheumatic fever to bacterial endocarditis and rheumatoid arthritis. The heart in rheumatic fever. Modern treatment and prophylaxis.

Monday, March 5th, Stated Meeting of the Clinical Society of the New York Polyclinic Medical School and Hospital, with the following program:

1. The Educational Program of the American Medical Association. William D. Cutter, M. D., Chicago.

Discussion opened by John A. Hartwell, M. D. (by invitation) and Harold Rypins, M. D. (by invitation), Albany.

2. Cancer of the Stomach. J. Shelton Horsley, M. D., Richmond.

Discussion opened by Harlow Brooks, M. D., Allen O. Whipple, M. D. (by invitation) and the Surgical Staff of the Hospital.

A general discussion followed.

Jefferson Medical College.

The William Potter Memorial Lecture was delivered in the College Building on Thursday evening, March 1, 1934, by Charles R. Stockard, Ph.D., M. D., Professor of Anatomy, Cornell University Medical College, New York City. His subject was "The Genetic Basis and the Internal Secretions in Growth Types and Body Form."

News Notes from Duke University School of Medicine and Duke Hospital.

On February 21st, Dr. John H. Hamilton, Director of the State Laboratory of Hygiene, Raleigh, N. C., lectured on County Health Work.

On March 3rd, Dr. Vonnie M. Hicks held an operative clinic at the North Carolina State School for the Blind, at Raleigh, for the junior and senior students.

On March 6th, Dr. M. V. Ziegler, Director of the Division of County Health Work delivered a lecture on Public Health Work.

The Durham-Orange County Medical Society held its regular monthly meeting at Duke Hospital March 9th, and Dr. Oscar L. Miller, of Charlotte, N. C., presented a paper on Fractures of Both Bones of the Forearm, and Dr. L. Emmett Holt, Jr., of Baltimore, Md., a paper on Observations on the Absorption and Utilization of Fat.

"Health Recovery Campaign."

The Virginia Tuberculosis Association takes part annually in a nation wide educational campaign for the spread of information concerning the prevention and cure of tuberculosis. This year the keynote of the campaign is depicted in the poster which shows public health as a knight with sword drawn against a thief with torch and bag of gold, representing tuberculosis, and bearing the caption "Tuberculosis Robs You—Public Health Protects You."

In these days of high costs and low incomes the taxpayer should be gratified to know that while he only spends 50c in taxes for public health (as compared to $3.80 for roads, $16.17 for schools, $4.52 for police and $3.32 for fire protection), the returns in saving of life have been surprisingly large.

From 1911 to 1931 the average length of life in the United States increased seven years. The infant death rate was only 58 per 1,000 in 1932, while it was 170 in 1900. The death rate of the four principal communicable diseases of childhood has been reduced 60 per cent in ten years.

Tuberculosis, one of the most costly of diseases, has been reduced two-thirds since 1900 due to the concerted efforts of physicians, public health authorities and tuberculosis associations.

In spite of the depression, the death rate from tuberculosis continues to decline and the deaths from this disease in Virginia in 1933 was the smallest number ever reported by the Bureau of Vital Statistics. While this situation is gratifying it should not cause too much optimism as tuberculosis is a slow disease and the effect of the depression upon it may not show itself for several years.

Dr. Frank F. Thweatt, Jr.,

Class of '28, University of Virginia, Department of Medicine, is at present attached to the American Consulate at Naples, Italy. He was transferred in November, 1933, after having served for three years as Medical Officer in Charge, U. S. Marine Hospital, Vineyard Haven, Mass.

Dr. Thweatt was married on December 22, 1933, to Miss Hallie Lee Farrar, of Arrington,

Va., in The Little Church Around the Corner, New York City.

Dr. J. A. Grizzard,

Drewryville, Va., has been appointed by Dr. R. D. Bates, president, as a member of the Committee on Group Societies of the Medical Society of Virginia, to fill the vacancy caused by the death of Dr. E. L. Kendig.

May Day—Child Health Day.

On May 1st will be celebrated the tenth anniversary of the National Child Health Day. The Conference of State and Provincial Health Authorities of North America, which last year assumed the future responsibility for the national conduct of Child Health Day, has elected to continue the use this year of the slogan "Mothers and Babies First."

The Medical Society of the State of North Carolina

Will hold its annual meeting at Pinehurst, N. C., April 30th through May 2nd, under the presidency of Dr. I. H. Manning, Chapel Hill. Dr. L. B. McBrayer, Southern Pines, is secretary of the Society.

Dr. Harvey G. Bland

Has located in the Medical Arts Building, Newport News, Va., for the practice of surgery. He is a native of Middlesex County, Va., but was recently located in Tennessee. Dr. Bland graduated from the Johns Hopkins University School of Medicine in 1927.

Dr. J. Shelton Horsley,

Richmond, Va., was a guest speaker before the Clinical Society of the New York Polyclinic Medical School and Hospital, New York City, on March 5th, the subject of his address being "Cancer of the Stomach."

While on this trip, Dr. Horsley also attended the meeting of the Directors of the American Society for the Control of Cancer in New York.

Dr. Allen Southall Lloyd,

Class of '28, Medical College of Virginia, opened offices in Wainwright Building, Norfolk, Va., April 1st, and will give special attention to orthopedic work.

Dr. N. Thomas Ennett,

Formerly Medical Director of Public Schools of Richmond, Va., in which city he made his home for a number of years, has returned to his native State of North Carolina, where he is located at Mount Airy and engaged in Public Health work in Surry County.

Dr. W. M. Junkin,

Who, for the past four months, has been surgeon to the Petrie Hospital, Murphy, N. C., resigned his position, effective March 15th, to join the staff of the Elkins City Hospital, Elkins, W. Va. Dr. Junkin is an alumnus of the Medical College of Virginia and was formerly connected with the staff of McGuire Clinic, Richmond, Va.

Dr. Joseph T. McCastor,

An alumnus of the Medical College of Virginia, is still in Vienna, Austria, where he is continuing his work in surgery. His wife, Dr. Mary Cousins McCastor, is attending the obstetric clinics in Lausanne, Switzerland. Both report many interesting experiences and plan to remain in Europe another year.

Married.

Dr. Lucius H. Bracey, South Hill, Va., and Mrs. Gladys Yancey Bramham, Durham, N. C., February 22nd.

Dr. Everett Walker McCauley, Burlington, N. C., of the class of '32, Medical College of Virginia, and Miss Ella IreneWilson, Townesville, N. C., February 2nd.

The Annual Report of St. Elizabeth's Hospital,

Richmond, Va., for 1933 has just been published. It shows 1,126 patients admitted during the year 1933. There were twenty deaths among the operative surgical patients, two among the surgical non-operative cases, seven among the medical cases, and four among the urological cases, making the total number of deaths thirty-three, including two patients admitted in a moribund condition who died within twelve hours after admission. The mortality rate for all deaths was 2.93 per cent, as compared with thirty-seven deaths in 1932 and a mortality rate of 3.10 per cent. The mortality rate for operative surgical cases was 2.96 per cent as compared with 3.34 per cent for 1932.

Appended to the report and constituting an interesting feature of it is a synopsis of all deaths, including remarks on the cases, types of treatment, and report of the necropsies. Twenty-five necropseis (75.76 per cent of all deaths) were done and nineteen out of the twenty surgical operative deaths had necropsies performed.

The out-patient department reports 2,113 visits, including dressings, examinations and treatments during 1933, as compared with 1,440 in 1932. There were 639 ultra-violet ray treatments, 238 basal metabolism examinations, 120 electrocardiograms, and 480 microscopic tissue examinations.

Dr. Samuel H. Justa,

Class of '33, Medical College of Virginia, has located at Macclesfield, N C., where he will be engaged in general practice.

Dr. Stuart McGuire,

Richmond, Va., was in February elected president of the Richmond Alumni Chapter of Phi Beta Kappa, for the coming year.

Dr. Paul Kells,

Recently an instructor in medicine at the University of Virginia, Department of Medicine ,has located at Miami, Fla., with offices at 405 N. E. 90th Street.

Clinical Medicine and Surgery Changes Hands.

Forty years ago, *Clinical Medicine and Surgery* was founded by the Abbott Laboratories, under the name of *The Alkaloidal Clinic*, and, with various changes of name and editorship, has been owned by them ever since.

For the past ten years, the journal has operated under the editorship of Dr. George B. Lake. The sole ownership of the journal now passes to Dr. Lake, who will continue its independent editorial policy, in form and in fact as well as in policy. The new editorial and business offices of the journal are in the Medical and Dental Arts Building, Waukegan, Ill., with a Chicago office at Room 670, 410 No. Michigan Ave.

The American Association on Mental Deficiency

Will hold its annual meeting at the Hotel Waldorf-Astoria, New York, May 26, 27, 28 and 29, 1934. The Saturday session, May 26th, will be given over to the sociological, psychological and the special educational aspects of the problem in order that local social workers and school teachers may have an opportunity to attend without interfering with their regular duties. The Tuesday afternoon session will be a conjoint meeting with the American Psychiatric Association. Data as to the program may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Ill.

A Correction.

We recently announced in error that Dr. Charles A. Easley, Jr., was located at Dry Fork, Va. Dr.Easley's father is located at Dry Fork, but Dr. Charles A. Easley, Jr., is working with the du Pont Plant at Belle, W. Va.

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For Sale—

One Ultra-Violet Ray Machine, purchased from the General Electric X-Ray Corporation. V-2888, 110 volt, A. C., 60 cycles, Model C No. 63531, Tube No. 33655, with generator. This machine has been slightly used and is in good condition. For sale for $150.00 cash. Write "C. T. C.," P. O. Box 1895, Richmond, Va. (*Adv.*)

Obituary Record

Dr. William Latane Varn,

Of South Hill, Va., died at a Richmond hospital, March 21st, after a short illness which started with an infection of his left hand. Dr. Varn was forty-three years of age and a graduate of the Medical College of Virginia in the class of 1915. He practiced for a time in Cum-

berland County, Virginia, before locating in South Hill about eight years ago. Dr. Yarn was a member of the Medical Corps of the Army during the World War. He was prominently identified with the civic and professional life of his community, being president of the South Hill Rotary Club, president of the Mecklenburg County Medical Society, service officer of the American Legion, a prominent Mason and a vestryman of All Saints Episcopal Church of South Hill. He had been a member of the Medical Society of Virginia since shortly after locating for practice in this State. He is survived by his wife, four children, his parents and a large family connection.

Dr. Robert Daniel Tucker,

Prominent physician of Powhatan County, Va., died March 13th. He had been in ill health for more than a year. Dr. Tucker was seventy-two years of age and graduated in medicine from the former Columbian University, Washington, D. C., in 1892. He had practiced in Powhatan for forty years and was president of the Powhatan Bank, chairman of the county board of supervisors, and chairman of the Powhatan Democratic Committee. Dr. Tucker had been a member of the Medical Society of Virginia since 1894. His wife survives him.

Dr. William Penn Reese,

Well known physician of Franklin County, Va., died February 22nd at his home at Taylor's Store. He was eighty-six years of age and a graduate of the University of Pennsylvania, School of Medicine, in 1872. Dr. Reese had been a member of the Medical Society of Virginia for fifty-six years. He was also one of the oldest members of the Phi Gamma Delta fraternity. Two daughters and two sons, one of whom is Dr. G. H. Reese, of Petersburg, survive him.

Resolutions on the Death of Dr. Benjamin Hallowell Swain.

At a special meeting of the Arlington County Medical Society on February 21, 1934, the following resolutions were adopted:

WHEREAS, God in His infinite wisdom saw fit to remove from our midst on January 28, 1934, our friend and colleague, Dr. Benjamin Hallowell Swain,

BE IT RESOLVED, That in the death of Dr. Swain this Society lost one of its most beloved and ardent members. Dr. Swain was born in Alexandria, Va., November 21, 1859. He received his degree of Doctor of Medicine from the George Washington University, in 1906. Dr. Swain and his family moved to Arlington County in 1917, where he practiced his profession actively until his death. He was county coroner for fifteen years, and took an active interest in county affairs. He was secretary of the Arlington County Medical Society for fifteen years. He was an active member of the First Baptist Church of Clarendon.

BE IT FURTHER RESOLVED, That a copy of these resolutions be spread on the minutes of the Society, a copy sent to the VIRGINIA MEDICAL MONTHLY, and a copy to the family.

R. N. SUTTON, M. D.,
Secretary.

Dr. Clarence Hyde Saunders,

Widely known physician of Chase City, Va., died March 14th, after an illness of several weeks. He graduated from the College of Physicians and Surgeons, Baltimore, in 1891. Dr. Saunders had been a member of the Medical Society of Virginia for twenty-five years. His wife and two daughters survive him.

Dr. Edgar Bentley Noland,

Bassett, Va., died suddenly March 2nd. He was forty-five years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1910. Dr. Noland served as Lieutenant in the Medical Corps during the World War and saw duty overseas. He located at Bassett following the war. Dr. Noland was formerly a member of the Medical Society of Virginia. He is survived by his father, Dr. B. F. Noland, of Loudoun County, two sisters and two brothers, one of whom is Dr. Stacy T. Noland, of Clarendon.

Resolutions on Death of Dr. J. W. C. Jones.

WHEREAS, on February 8, 1934, Dr. John Walker Carter Jones passed to his reward:

BE IT RESOLVED, That the Warwick County Medical Society has lost a most valuable member, a friend of all mankind, a noble soul who was unselfish in his dealings with his fellowman, a supporter of every civic good in the community, an outstanding citizen.

He always took a foremost place in medical affairs and was loyal to his brother physicians. He was deeply beloved by every physician and adored by the multitude who were fortunate to be under his ministrations.

He was an oculist and otolaryngologist of singular ability, enjoyed a large practice and contributed much to the furtherance of his specialty. He stood for all that was good and clean in the practice of medicine, and had a supreme distaste for the sham and the make-believe. He had membership in various civic and fraternal associations, and was an active member of the Episcopal Church.

BE IT RESOLVED FURTHER, That the members of this Society convey their deepest sympathy to his family, and a copy be published in the VIRGINIA MEDICAL MONTHLY.

CLARENCE PORTER JONES,
R. A. DAVIS,
E. W. BUCKINGHAM,
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Vol. 61, No. 2.
WHOLE No. 983.

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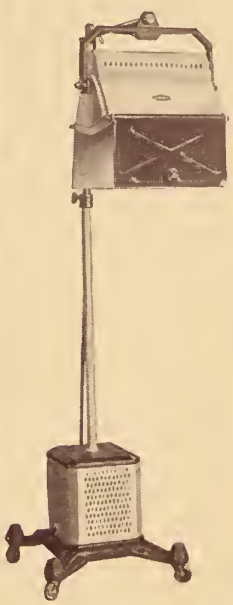
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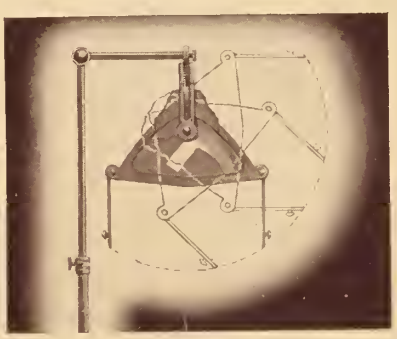
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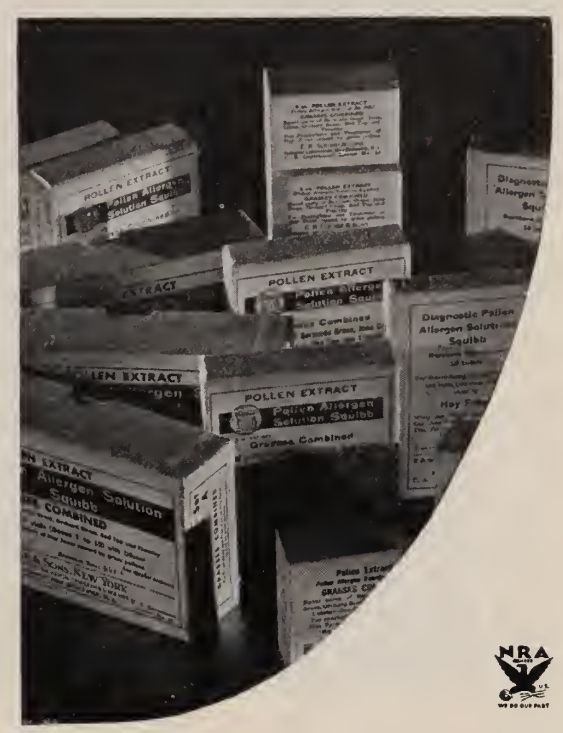
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Va. Society of O. L. & O.	H. G. Preston, Harrisonburg	E. W. Burton, Charlottesville	Lynchburg, May, 1934.
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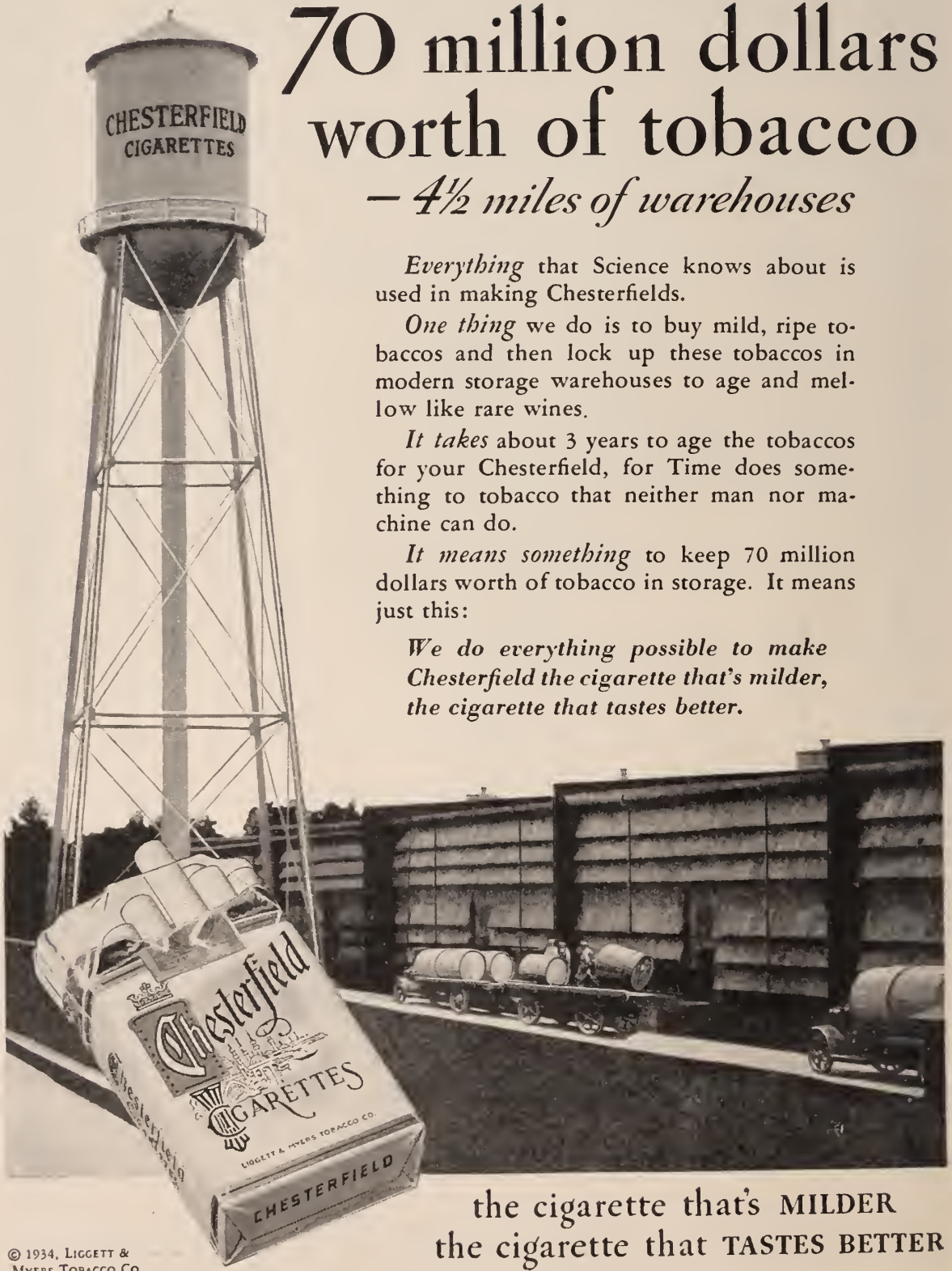
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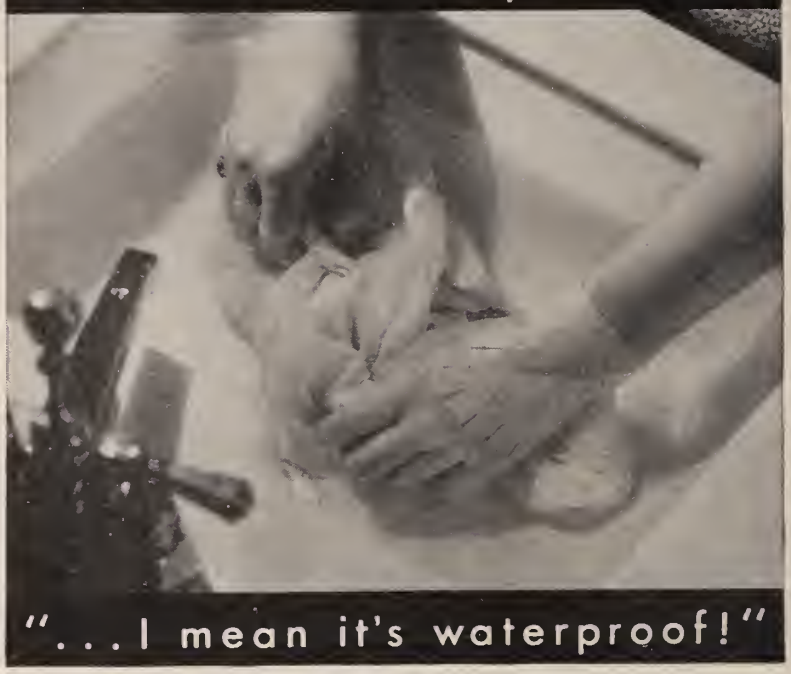
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PHYSIOLOGY OF THE STOMACH.*

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One hundred years ago, Dr. William Beaumont,[1] an army surgeon at Fort Mackinac, published his famous work on gastric digestion. So important were his contributions that on October 5th, this year, the New York Academy of Medicine commemorated the 100th anniversary of his notable publication. It would seem, therefore, that the Medical Society of Virginia, in holding its symposium on diseases of the stomach has selected a time most appropriate for the occasion.

The conquest for broader knowledge of the workings of the human body and its various organs is exemplified in the publication of Dr. Beaumont, and by way of tribute to this great pioneer of medicine a brief mention is made of the incident which led to his celebrated and uncontroversial observations.

A young French-Canadian boy, Alexis St. Martin by name, had been accidentally shot in the abdomen, the bullet perforating the musculature of the stomach. Dr. Beaumont was called to treat the case, and in spite of all his efforts the wound would not heal, but left a fistulous opening in the abdominal wall through which gastric contents would escape. For two years he cared for and attended the patient in his own home without success; then realizing an opportunity for some important observations, he began his studies, continuing them over a period of eight years; actually watching the stomach at rest and at work. He observed the types of foods that caused the gastric juices to flow; what foods were easily digested, and what foods retarded the digestive processes; how long certain diets remained in the stomach, and the length of time necessary to digest a normal meal. His observations are recognized as one of the great classics of medicine, and have brought to their author undying fame.

*Read as part of the Symposium on Diseases of the Stomach at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

Since the epochal work of Beaumont, much has been written on gastric physiology, and the scope of our information on the various phases of this subject is so broad, that to give a detailed and elaborate presentation on the physiology of the stomach is both time consuming and impractical. The best that can be hoped for is a brief consideration of some of the clinically important features of gastric physiology.

Not until Hemmeter, 1896, and Cannon, 1898, advanced a method for studying the size and shape of the stomach in living human beings by means of X-rays, was its true shape and position known. The normal position of the stomach was then found to be somewhat at variance to the classical anatomical description as ascertained from cadavers. After the ingestion of a barium or bismuth test meal, the shape of the stomach is found to conform closely to the letter "J", the fundus and cardia occupying a more or less vertical position, while the pyloric antrum is practically horizontal. The division of the stomach into these two main parts is usually accentuated by the prominence of the incisura angularis on the lesser curvature. This division of the stomach is also intimately connected with certain phases of its physiology.

Within a few minutes after the taking of food, activity in the stomach begins. The multitude of small branched tubular glands, which make the greater portion of its mucous membrane, begin to pour forth their secretion. As the mass of food accumulates, it is penetrated with difficulty by the gastric juice, and thus affords time for the food, which has been previously mixed with saliva, to undergo partial carbohydrate digestion. The conversion of starches to maltose and dextrin by the pytalin of the saliva causes the food mass to liquify and thus facilitates the action of the gastric enzymes.

It has been shown that the epithelial lining of the

stomach, and the glands in proximity to the pyloric and cardiac orifices, secrete a fluid containing mucin, with little or no enzyme activity, and, therefore serves to lubricate the food and protect the stomach lining against irritating substances. The glands occupying the cardia, and particularly that portion of the cardia known as the pre-pyloric region, are endowed with the greatest activity, in so far as the digestion of food is concerned. Two distinct types of cells make up these glands: first, there are the chief or lining cells, whose function is to secrete the enzymes pepsin and rennin; second, there are numerous irregularly spaced cells, occupying a position more remote from the lumen of the glands. These cells are called parietal cells, and because of their acidophilic staining nature, are sometimes termed oxyntic cells. Their function is to form and secrete hydrochloric acid.

The enzymes pepsin and rennin are not secreted in their active forms, but as pro-pepsin and pro-rennin, and in order that they may exert their action it is necessary that they be activated by other substances. The substance responsible for the conversion of pepsinogen or pro-pepsin to the active form, and for the conversion of pro-rennin to rennin, is hydrochloric acid. In all probability, it is not so much a question of hydrochloric acid *per se,* but because an acid medium is essential for the action of pepsin. It would seem, therefore, that a large number of acids might effectively replace hydrochloric acid in this function; even the citric acid of orange or lemon juice might prove adequate substitutes. Comparatively recent studies seem to indicate that fruit juices can replace hydrochloric acid in the treatment of achylia, and are definitely less irritating, and certainly more palatable. Whether this substitution is justifiable or not remains for further investigation.

The formation of hydrochloric acid by the parietal cells is of great interest to the physiologist. It was William Prout, in 1824, who demonstrated that the acidity of gastric juice was due to this acid, and not to some organic acid as one might ordinarily infer, but even today the mechanism of its formation is one of the many mysteries of biology. By reason of analogy, Maly, in 1874, proposed a reaction by which hydrochloric acid might be formed in the glands of the stomach. It was suggested that the interaction or reaction of sodium chloride and carbonic acid can produce minute quantities of hydrochloric acid in a test tube, and this reaction might occur in the parietal cells of the stomach. The fact that these cells are continually removing the acid as it is formed would explain a greater concentration than can be secured from test tube experiments. It is also suggested that the hydrochloric acid is secreted into the lumen of the gastric glands, whereas the sodium carbonate is carried away by the lymph. The reverse of this condition is thought to occur in the pancreas, where sodium carbonate is secreted and the acid passes into the lymph. It is interesting to note that pure pancreatic and gastric juices approximately neutralize each other volume for volume.

Pure gastric juice may be obtained for study in several ways. Spallanzani would swallow a sponge to which a string was tied, and after it had absorbed sufficient gastric secretion, would pull it back and express the juice. The Russian physiologist, Pavlov, segregated a small portion of the stomach and formed a pouch which communicated with the exterior through an abdominal fistula. His experiments on conditioned reflexes, and psychic secretion of gastric juice are well known. Beaumont, in 1833, and Carlson in recent years, have carried out exhaustive studies on human beings with fistulae. For clinical observation, however, our procedure for obtaining gastric juice is quite simple. After a suitable test meal, a Rehfuss tube is passed into the stomach and the gastric contents removed as desired.

Pure gastric juice is a thin, watery liquid, colorless and strongly acid in reaction. The concentration of hydrochloric acid is about .4 per cent to .5 per cent, or approximately equivalent to a tenth normal solution. It contains a number of inorganic ions, such as sodium, potassium, calcium, magnesium, phosphates and carbonates. The most important organic constituents are the two enzymes pepsin and rennin. There is probably a small amount of lipase. Approximately two-thirds of the acidity of gastric juice is due to free or uncombined hydrochloric acid; the other third is loosely combined with protein. This high acidity is of some value to the body in destroying many pathogenic organisms that might otherwise invade the digestive tract. When the acid is low or absent, bacteria make their appearance. Among those most commonly observed is the Oppler-Boas bacillus, and hence the occurrence of these organisms may be of considerable diagnostic importance.

Pepsin in conjunction with hydrochloric acid brings about the most important digestive changes occurring in the stomach. So essential is the acid that the process should correctly be termed pepsin-hydrochloric acid digestion. When protein is subjected to the influence of gastric juice, there first occurs a formation of acid-metaprotein, which is subsequently split into primary and secondary proteoses. It is arbitrarily stated that the end point in peptic digestion is the formation of soluble peptones. No amino acids are formed except traces which probably result from acid-hydrolysis. Thus it may be said that, as a result of the action of pepsin, the large and complex protein molecules have been dissociated and broken down into much simpler molecules of peptones and albumoses. Probably about one-tenth of the total peptid linkage of the protein molecule has been severed in this way. This partially digested protein passes into the intestine where other enzymes, trypsin and erepsin, complete the digestive process by converting the albumoses and peptones into their constituent amino-acids.

The enzyme rennin was for a time thought to be identical with pepsin, or certainly inseparable from it. It is believed, now, however, that the enzymes are separate and distinct. Rennin when injected into the blood will produce an antibody; pepsin will not. The two enzymes can be separated from solution by means of a strong electric current, so that it seems fairly definite that in spite of the intimate relation of rennin to pepsin, and even other proteolytic enzymes, rennitic activity is not just a stage in the cleavage of proteins as was previously supposed.

The chief action of rennin is upon casein in milk, converting this protein into so-called para-casein, which interacts with calcium to form an insoluble curd. When calcium is removed from milk, or immobilized by sodium citrate, rennin exerts no visible action. The chief function of this enzyme would seem to be one of retarding the passage of milk from the stomach, thus ensuring more complete peptic digestion.

There may be other enzymes and hormones elaborated by the stomach, about which we have little information at present. Nevertheless, there is some indirect evidence of their existence which cannot escape more serious consideration. The relationship of gastric function to certain systemic disorders, notably pernicious anemia, has been known for some time. Within the past few years much light has been shed on this relation. In 1929, Castle observed that beeksteak which had been previously subjected to peptic digestion in a normal person was quite effective in treating pernicious anemia, producing the same response as liver extract. Shortly afterwards Sturgis and Isaacs (1930) found that dried hog's stomach was equally as potent as a liver preparation in combating this disease. Subsequent studies by Hemming and Steiger reveal that the mucosa alone is inactive in this respect unless fed along with meat. It is therefore suggested that another enzyme is present in the stomach which acts specifically on muscle tissue liberating the hemapoietic factor, and that this factor is stored in the liver. This intrinsic substance of the stomach, whatever its nature, is destroyed by heat, and would apparently indicate that it is more in the nature of an enzyme.

Many factors are involved in the elaboration of gastric juice. The mechanism whereby this is accomplished is both nervous and chemical. It will be recalled that the stomach receives its nerve supply from both divisions of the autonomic nervous system, the cranial portion, or vagus nerve, supplying both secretory and motor fibers. Other nerve fibers are derived from the true sympathetic by way of the celiac plexus. These latter fibers are both inhibitory to secretion and to the motor activity of the stomach, and therefore are diametrically antagonistic to the action of the vagal fibers. Thus there is established a balanced nervous mechanism which regulates both motor and secretory activity of the stomach. These nerves are influenced greatly by impulses arising in many regions of the body, and affect secretion and motility in a corresponding manner. The sight, taste, or smell of palatable food causes a reflex flow of gastric juice, whereas unpleasant food or painful stimuli produce marked inhibition.

Since our emotions are intimately associated with activity of the sympathetic nervous system, as has been interestingly demonstrated by the researches of Cannon, it is not difficult to understand how worry, anxiety, fear, or fright, exert a decided influence on gastric physiology. These emotions, associated with sympathetic stimulation, lead to a decrease in both secretion and motility of the stomach. The passage of food from the stomach is retarded, and, because of a lack of enzymes and hydrochloric

acid, it undergoes fermentation with the production of gaseous eructations. Probably a large percentage of our so-called dyspepsias are of this type. It may be said that psychological therapy in certain gastric disorders is not without some sound physiological basis.

But the secretory activity of the stomach is not entirely dependent upon its nerve supply. In 1906 Edkins carried out experiments which indicate that a chemical mechanism may account for the secretion of gastric juice. It was shown that many foods, such as broth or meat extracts, if placed in the stomach through a tube or fistula, would induce marked gastric secretion, even when all nerve supply to the stomach had been severed. Certain products of protein digestion, therefore, acted as specific excitants to gastric secretion. This substance was termed gastrin, or simply gastric hormone.

Further studies on the nature of this hormone have been made by Ivy and Farrell. They succeeded in transplanting a small denervated stomach into the mammary region of a dog, and by introducing certain foods into this stomach, they observed an increase in the flow of gastric juice. The increased secretion was not due to any mechanical irritation of the mucosa, but to a definite hormone carried to the stomach glands by the blood stream. It is well known that certain drugs, such as pilocarpine, muscarine or histamine will induce secretion of gastric juice, but the juice elaborated under the influence of these drugs is different from that resulting from the normal gastric hormone. Histamine produces a secretion containing a normal amount of hydrochloric acid, but deficient in enzymes. Additional studies on the nature of this secretory hormone have shown that it is formed in comparatively large quantities when acids come in contact with the duodenal mucosa. The hormone thus liberated is spoken of as secretin, and is probably identical with gastrin. Under normal conditions none of the hormone gets into the lumen of the duodenum, but is carried away by the blood stream, as in the case of any other internal secretion.

Purification of this hormone has been accomplished, but not in amounts to be of any great importance, as yet, to the gastro-enterologist. It promises, however, to supplant histamine in the detection of functional hypochlorhydria and achylia, being much superior to the latter drug in that it stimulates a more normal secretion and is devoid of the dilating effect upon the capillaries.

In summary, it might be said that gastric secretion may be divided into three phases: First, a cephalic phase, which includes psychic influences, such as the taste, sight, or smell of food. This is a purely nervous mechanism of gastric secretion. Second, a gastric phase resulting from the presence of certain foods in the stomach, effecting a liberation of gastrin; and, third, an intestinal phase in which secretin is formed by the ejection of acid-chyme on the duodenal mucosa. It has been shown by Pavlov that the quality of the gastric juice is remarkably adapted to the type of food to be digested. Fats and carbohydrates cause little secretion except through psychic influences, whereas proteins call forth a type of gastric juice particularly rich in enzymes.

"The stomach exhibits a postural activity or tone. When empty its walls are firmly in apposition. When food enters the stomach the muscle fibers are elongated to enlarge the size of the cavity uniformly, in order to accommodate the new contents without much change of internal pressure." (Wright). Within a short time after taking food movements begin. A constriction wave begins at the transverse band, or junction of cardia and pyloric antrum, and this wave of constriction progresses slowly and uniformly with a somewhat rotating movement toward the pylorus. At first these waves occur at intervals of about twenty seconds, and become more frequent and more powerful, arising farther and farther back in the cardia until practically the entire stomach is involved in these peristaltic movements. The cardiac orifice remains closed so that food is not forced back into the esophagus. As these waves progress toward the pyloric orifice they are preceded by a wave of relaxation which is made possible by the intrinsic innervation of the stomach musculature. This phenomenon, commonly called the myenteric reflex, or "law of the intestine," is not confined to the intestines alone, but is a common property of the entire alimentary canal. At certain intervals the pyloric sphincter relaxes and the constriction wave forces some of the stomach contents into the duodenum.

There has arisen much discussion and controversy regarding the mechanism of opening of the pyloric sphincter. Cannon has shown that hydrochloric acid in the stomach favors relaxation of the pylorus, while in the duodenum it causes contraction. "In

this way, it may be imagined that after each ejection of acid-chyme, the sphincter is kept closed until the acid material in the duodenum is neutralized, and so automatically a mechanism is provided by means of which the duodenum is charged at intervals, and at such times as it is prepared to receive and neutralize a new quantity of chyme." As beautiful and as well conceived as this theory might appear, it fails entirely to find support as clinical observation on the opening and closing of the pylorus. The presence of acid in the stomach probably plays no part in the opening of the pylorus. In achylia gastrica, there is no free hydrochloric acid, yet the stomach may empty itself with surprising rapidity, and the sphincter tend to be somewhat patulous. In duodenal ulcers associated with hyper-acidity, there may also be a rapid emptying time. In general, it is thought that the pylorus acts as we would expect any part of the intestinal tract; it opens as a wave of relaxation strikes it, and closes as it is involved in a peristaltic wave of constriction.

Under normal conditions reversed peristalsis is never found in the stomach. It does occur normally in the ascending colon, but its presence in other portions of the digestice tract usually portends some pathological condition, and may denote obstruction. In high obstruction, reversed peristalsis may involve the entire stomach, so that gastric contents or even intestinal contents may be forced back into the esophagus.

The phenomenon of vomiting does not necessarily imply reversed peristalsis, nor does it mean any activity on the part of the stomach. The muscles of respiration and the abdominal muscles are probably more concerned in the act of vomiting than the stomach musculature itself. The complex series of movements occurring during emesis are probably controlled by a group of nerve cells closely associated with the vagal nuclei in the medulla. This group of cells, located near the floor of the fourth ventricle, is termed the vomiting center, and is also in close connection with the salivary nuclei, which accounts for the salivation and nausea which usually precede vomiting. Since some of the vagal fibers terminate in the vomiting center, it is not difficult to understand how impulses arising in any organ innervated by the vagus nerve can easily induce reflex emesis. Emetic impulses frequently arise in the pharynx, esophagus, stomach, intestinal tract, heart, lungs or uterus, and many other regions.

When vomiting is excessive and prolonged, it gives rise to a group of symptoms resembling tetany. This condition is explained on the basis of certain changes in the blood as a result of the excessive loss of hydrogen ions. The continual loss of gastric juice, or hydrochloric acid particularly, creates a condition of alkalemia, which in turn affects the calcium of the blood. The reduction of so-called diffusible or ionized calcium leads to a state of increased nervous irritability and to the production of convulsions.

A study of the physiology of the stomach is incomplete without a brief consideration of certain gastric sensations. The sensations of appetite and of hunger are so closely associated that some observers held that there was only a quantitative difference. Experiments, however, have shown that the sensations are essentially different in many respects. Appetite is a pleasant sensation associated with a reflex secretion of saliva and gastric juice, and involves little or no motor activity on the part of the stomach. Hunger, on the other hand, is described as a dull, gnawing or aching sensation, and is referred to the epigastrium or lower sternum. The observations of Cannon, and of Carlson, and experiments in our own laboratory by Dr. Main, have shown that hunger pains are associated with intermittent contractions of the stomach. The peristaltic waves occurring during hunger differ from normal contraction in that they are not confined to pyloric region, but involve the entire organ.

The mucous membrane of the stomach is not sensitive to tactile stimuli as the mucosa is not endowed with nerve fibers carrying epicritic sensibility. Strong irritants may be introduced into the stomach without causing any pain, and may produce only a sensation of warmth, but violent contractions or forceful distention may give rise to severe pain. Considerable discomfort also results when a peristaltic wave passes over an ulcer. One of the most important causes of pain appears to be an increased tension of the stomach wall. A second cause of gastric pain is an involvement of the visceral peritoneum. Pains of gastric origin are usually referred to the epigastrium or lower sternum. As an explanation for the phenomena of referred pains, it has been suggested by Head, that, when two sensory nerves enter the spinal cord at the same level,

one nerve carrying epicritic sensations from some cutaneous area, the other nerve carrying protopathic sensibility from some viscera, the cerebral cortex cannot definitely localize sensations from the viscera, but refers it to some corresponding region of the body where pain sensibility is more highly developed. Sherrington states that around the synapses in the spinal cord there is liberated an excitory substance which he terms "E" substance, and that this agent spreads or radiates through the cord, so that it may stimulate adjacent neurones, and will thus produce the same sensation as if these nerves had been stimulated at their particular end-organ in the skin.

It is quite obvious that this brief presentation of the physiology of the stomach is wholly inadequate for the gastro-enterologist. It may, however, serve as a nucleus around which a more detailed discussion of the intricate mechanism of gastric physiology can be woven. It will probably have its greatest value to those of us, who, having a more general interest in the medical sciences, are in need of a brief review on some of the more fundamental aspects of the physiology of the stomach, in preparation for a consideration of its disorders and their treatment.

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THE DIFFERENTIAL DIAGNOSIS OF DISEASES OF THE STOMACH.*

BLANTON P. SEWARD, M. D.,

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In the diagnosis of diseases of the stomach the history is one of the most important factors. From a history, carefully taken and skilfully interpreted, we may learn, first, whether the patient's gastric symptoms are of primary or secondary importance; and, second, at the very outset we get a clue as to the patient's nervous and mental state. A thorough physical examination is also necessary, although, as a rule, little or no information is obtained from it concerning the stomach and its functions. The examination, however, enables us to determine whether disease elsewhere is likely to be the cause of the complaint correctly or incorrectly attributed by the patient to the stomach itself. It seems scarcely necessary to say that gastric symptoms are much more frequently due to disease in other organs, as, for example, in the gall-bladder, the appendix, the generative organs, the thyroid gland, the cardio-vascular, the pulmonary and the central nervous systems, than to disease in the stomach. The findings on the physical examination will lead us in making the special investigations necessary before arriving at a definite diagnosis.

*Read as part of the Symposium on Diseases of the stomach at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

ORGANIC DISEASES OF THE STOMACH

Cancer. Cancer of the stomach should be our first thought when a person of middle age or older complains of any digestive disturbance. Gastric disturbances with loss of appetite, weight and strength beginning in the latter half of life will often be due to other causes, particularly cardio-vascular-renal disease and cholecystitis and less frequently indurated ulcers and gastric syphilis. If not concomitant, cardio-vascular-renal disease may be differentiated from cancer of the stomach by the history, by a study of the cardio-vascular system and renal function. The differentiation of cholecystitis and cancer of the stomach in its early stages may be difficult or impossible by the symptoms alone, although as a rule it is easily made by a roentgen-ray examination of the stomach and a cholecystogram. Difficulty may also be encountered

in differentiating the two conditions later, particularly when a mass is palpable just to the right of the mid-line, and if jaundice, which is not uncommon in the late stages of cancer of the stomach, is present. A palpable mass in the epigastrium may be due to inflammation and induration surrounding an ulcer, or to syphilis of the stomach. While much help will be obtained from the history and the examinations, including the roentgen-ray, the Wassermann and the therapeutic tests, in differentiating these conditions, yet the diagnosis may ultimately rest upon an abdominal exploration and a histologic examination of the tissue.

Ulcer. The most prominent symptom of ulcer of the stomach is pain in the epigastrium, which varies in intensity from a mild discomfort to a burning, boring pain, beginning in some instances a few minutes after meals, and in others from one to three hours later. The nearer the ulcer is situated to the pyloric sphincter the longer will the interval be between the meal and the onset of the pain, and the more will it simulate that of duodenal ulcer. Ulcers also cause nausea and vomiting, and less frequently hematemesis. Patients with gastric ulcer give a history of periods of remissions of symptoms, still the periodicity of the symptoms is often less striking than in cases of duodenal ulcer.

The really great diagnostic problem in all cases of ulcer, especially in patients past thirty years of age, is to differentiate ulcer and cancer. It may appear to be easy in some cases, still in other cases in which there is persistent swelling and induration or perhaps spreading of the lesion, we cannot be certain that cancerous changes have not taken place except by exploration and examination of sections of the tissue.

Ulcers are often attended with complications, the most important of which are pyloric obstruction and perforation. Obstruction to the passage of food through the pylorus may be suspected when the patient complains either of increased pain in the epigastrium, or increased nausea and vomiting, or the vomiting of large quantities of food. While the differentiation of pyloric obstruction due to spasm of the pylorus from that due to an unyielding cicatrix cannot be readily made in all cases, even with the roentgen-ray, yet the patient's response to rest in bed, belladonna, sedatives, and a reduction in the diet is an aid in determining the nature of the obstruction.

Perforation is the most serious complication. It may occur at any time in the course of an ulcer. Instantly the patient suffers severe pain in the epigastrium. The board-like rigidity of the abdominal muscles and the constitutional symptoms developing almost immediately after the perforation indicate an acute surgical condition. The finding of air beneath the diaphragm on the flat roentgen-ray film, is pathognomonic of a perforation in the stomach or upper portion of the small intestine.

Gastritis. It is doubtful now whether gastritis exists as an entity. It is commonly associated with gastric ulcer and cancer, and it may also be associated with some of the constitutional diseases, but in all these cases it is overshadowed by the more important primary condition. The diagnosis of gastritis, or perhaps more properly, gastro-enteritis, may be made in those cases in which the ingestion of spoiled food or an excess of alcohol or corrosive drugs causes pain, nausea, vomiting and often diarrhea. In some cases the question may arise whether the patient has acute appendicitis. In the latter condition the pain localizes in the right lower quadrant; there is increased tenderness in this region on the sudden release of pressure, and also radiation of pain on pressure to the epigastrium. The white and differential leucocyte counts may also be helpful. Frequently the attack is confused with gall-stone colic. In the passage of a gall-stone the pain and tenderness become more intense in the region of the gall-bladder, and vomiting occurs as the pain reaches its height. The gastric crises of tabes dorsalis may also be confounded with acute gastro-enteritis in adults, and it is always wise to test the patella and pupillary reflexes.

Syphilis. Although not of common occurrence, syphilis of the stomach is being recognized more frequently. The lesion is generally a tertiary one, causing ulceration, fibrosis, and contraction without pathognomonic symptoms. While the symptoms may simulate those of ulcer or cancer, and the finding of a palpable mass in the epigastrium will even more strongly suggest a cancer, yet a history of the patient's having contracted syphilis several years previously, or the finding of a positive Wassermann reaction of the blood or spinal fluid and other syphilitic stigmata, are in favor of the diagnosis of syphilis. Syphilitic lesions of the stomach are said to present a characteristic roentgenological appearance, still in some instances it is difficult for the

roentgenologist to distinguish them from cancer. When such difficulty is encountered, the therapeutic test may be helpful in clarifying the diagnosis; time should not be lost, however, in giving the test since patients with syphilis are not immune to cancer.

Foreign Bodies. Small foreign bodies in the stomach generally do not cause symptoms, while larger bodies may cause either acute or chronic symptoms. In the majority of cases we can obtain a history of the patient having swallowed an object, or eaten some fruit such as the persimmon, which contains a high percentage of gum and pectin. When such a history cannot be obtained, we must rely upon the roentgen-ray for the diagnosis.

FUNCTIONAL GASTRIC DISTURBANCES

A great many gastric disturbances must be called functional for the reason that no organic disease can be found to explain them. The symptoms which may be engendered by the state of mind, or by fatigue may affect any part of the gastrointestinal tract, although the stomach is the most frequently affected. Bad news, controversies, anxiety, worry, domestic unhappiness, thwarted ambitions, unhappy and uncongenial surroundings, prolonged mental and physical strain frequently cause uncomfortable sensations in the epigastrium, nausea, vomiting, and loss of appetite.

Fatigue neurosis is perhaps the most common diagnosis which is made in cases of nervous patients who show no sign of organic disease. These patients complain of loss of appetite, fulness after meals, belching, constipation and nervousness following long hours of work, heavy responsibility, and perhaps insomnia. They often observe that their symptoms improve or disappear when they take a rest. In some instances there is no history of long hours of work, still the patients are irritable, tense, apprehensive or on edge. Many other men and women get along well enough until their emotions are aroused, or they are annoyed and lose their temper. Discomfort in the epigastrium and sometimes severe pain follows an emotional debauch. There are other people, who through daily fear of some malady, particularly cancer, have digestive disturbances of various kinds constantly, or at intervals for years.

The neuroses, particularly neurasthenia and psychopathy, are the cause of gastrointestinal symptoms in many people. These people have a poor nervous heredity and are unable to adjust themselves to their environment. They spend their energy unnecessarily and unwisely in worrying about everything around them, and about diseases they do not have; they cannot make decisions quickly; painful emotions are racking them day after day and night after night.

A number of women with hypo-ovarianism are unhappy and poorly adjusted; some are restless because they have not married, and others who are married are worried because their sex life is puzzling and unsatisfactory to them. They, like the neurasthenics and the psychopaths, are prone to be querulous; they complain at different times of pain in the epigastrium and in other parts of the abdomen, of loss of appetite, nausea, abdominal distention, of queer sensations in the head, and so on until in the course of a few years they seem to have had symptoms of nearly every disease that is known. They do not confess their real trouble unless we tactfully open the way for them to talk. In all of these cases we must focus our attention on the inherent or acquired weakness of the patient, and his or her inability to become adjusted rather than on the aches and pains in the abdomen.

Gastric symptoms are frequently complained of by men and women who have long slender bodies. While such a body habitus cannot be considered a disease, yet it predisposes its holder to the development of symptoms should other factors become operative. Such factors as infections, wasting illnesses, worries, continual loss of sleep, mental overwork, and dissipation cause a loss of weight in one who is already undernourished, and a disappearance of the deposits of fat around the abdominal organs, weakening the natural support of these organs. This, combined with weakness of the muscles of the abdomen and back, increases the negative pressure within the abdominal cavity and allows the stomach and intestines to become displaced downward with splanchnic venous stasis. Later a long train of purely functional symptoms begins. In addition to the ptosis we sometimes find a diminished or absence of the secretion of hydrochloric acid, rapid emptying of the stomach, a low blood pressure, a low metabolic rate and a secondary anemia. Many of these individuals are not neurotic; there is a real physical basis for their symptoms which improve, sometimes dramatically, under appropriate treatment. There are, however, in the

visceroptotic group a number of people of poor heredity which predisposes them to a weakened constitution and nervous tendencies. They are hypersensitive, they exaggerate their symptoms, and the mention of a fallen stomach or intestine or kidney increases their misery.

The physician will suspect that gastric disturbances are neurotic in origin or functional in nature by the variability of the symptoms, inconstant repetitions, the effect of psychic influences, and negative physical, roentgen-ray and laboratory examinations.

Disturbances of Gastric Secretion

Disturbances of gastric secretion have occasioned much interest and speculation. It is well known that there are normal variations in the secretion of hydrochloric acid, and that hyperacidity, hypoacidity or even achlorhydria may be present without causing symptoms. When hyperacidity is found it may have no significance, it may be due to hypersensitiveness of the patient, or it may be a result of organic disease. Even when associated with pyrosis it is probable that the symptoms are due to disordered peristalsis rather than to the hyperacidity. A trustworthy diagnosis of hyperacidity cannot be made from the symptoms alone.

The incidence of hypochlorhydria or achlorhydria is greater than that of hyperacidity. This may be accounted for by the frequency with which we find achlorhydria in elderly people, still we often find a subnormal or an absence of the secretion of hydrochloric acid in young and middle aged people. Although achlorhydria is found in healthy people, yet it is much more likely to cause symptoms than is hyperacidity. It often causes a loss of appetite, nausea, a burning sensation before meals, fullness after meals and eructations. The only symptom, however, which can be ascribed with confidence to it is diarrhea. While diarrhea does not occur in a high percentage of cases, yet it is an important symptom for the reason that other types of diarrhea are rarer in this climate.

When achlorhydria is present in persons not advanced in years, or in those who have no demonstrable disease, the question often arises whether it is due to atrophic gastritis or whether it is of functional origin. Several investigators, after postmortem studies of the gastric mucous membrane of men and women who had achlorhydria for years, concluded that, although some inflammatory changes can be found, atrophic changes are generally insignificant or absent.

The relationship between achlorhydria and nervousness, and such psychic states as anger, worry and anxiety, is an interesting one. Experience has shown that a certain variation in gastric analyses may be attributed to psychic or nervous influences, and that these variations tend to be more marked in neurotic individuals, still it is highly improbable that complete absence of hydrochloric acid can be attributed to transient nervous or emotional disturbances. General nervousness may cause a patient with achlorhydria to notice gastric or intestinal symptoms which might otherwise be disregarded. On the other hand, the nervous condition may be in some way a result, not the cause of the digestive disturbances, since in many instances the effects of the achlorhydria are corrected by a proper diet and the administration of hydrochloric acid.

In spite of every refinement of the technic, gastric analysis still fails in most cases to throw much light on the diagnosis of disease except in pernicious anemia. Its greatest usefulness is in demonstrating the presence or absence of hydrochloric acid, lactic acid, Sarcinae and Boas-Oppler bacilli.

The Value of the Roentgen-Ray

The roentgen-ray has become a necessity in making a diagnosis of gastric disturbances. Every patient with a gastric complaint that cannot be readily diagnosed, or whose symptoms persist after a reasonable period of treatment, should have the benefit of a roentgen-ray examination. By it we visualize the size, shape and position of the stomach; the occurrence, rate and character of the peristaltic waves, the emptying time, and filling defects and their location. Of special value are repeated examinations in cases of ulcer to determine the stage of healing, or spreading of the lesion, and the necessity for excision if there is no response to treatment. While the clinical study of the patient is always of the greatest importance, still the roentgen-ray is indispensable in patients with gastric complaints since it enables us to make a more accurate diagnosis.

THE MEDICAL TREATMENT OF DISEASES OF THE STOMACH.*

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The large majority of patients with gastric complaints will be found to be suffering from functional disorders rather than organic disease and therefore we shall discuss these conditions first.

Brown[1] classes the functional disorders as primary, psychogenic, and reflex.

The treatment of the primary disorders consists of the correction of the causative bad habits. These are rapid eating, improper mastication, irregular meal hours, poor choice of foods, eating when fatigued or emotionally upset, and lack of exercise, fresh air, sleep, and diversion.

The treatment of the psychogenic group, or those whom we may classify as having gastric neuroses, is probably the most trying and yet the most important problem which we have in the field of gastric complaints. The most essential procedure in the treatment of these cases is a searching history and a painstaking physical examination, including all necessary laboratory tests. All too often these patients have been turned away, after a cursory examination, with a prescription for an alkaline powder, which may be contra-indicated, and the advice to quit worrying over a complaint which is purely nervous. We should always remember that neurotic patients are subject to organic disease and that many functional disorders will respond to proper treatment. Our approach to the problems with sympathy, patience, and thoroughness in every detail will have a most helpful effect. If, at the conclusion of our study, we can tell the patient that he has no organic disease but does have a functional disorder, he will have more respect for our judgment and will be more willing to cooperate in the treatment. The most helpful book I have read on this subject is "Nervous Indigestion" by Alvarez,[2] of the Mayo Clinic. This book should be read and reread by every practitioner of medicine.

Without attempting to go into the treatment of the protean symptoms of the gastric neuroses, whether they be sensory, motor, or secretory, there are certain general principles which should be followed.

Ofttimes the convincing exclusion of organic disease will effect a cure. Again, the measures recommended for primary functional disorders will be effective.

As shown by Alvarez, the emotions often play a leading role in gastric complaints, and if the symptoms are due to an unhappy marriage or to business reverses, it is futile to expect results from a diet or a bitter tonic. If we can get the emotional conflict out into the open, and explain the relationship to the patient, much may be accomplished even if the environmental situation cannot be remedied.

Rest is a most important factor in the treatment of these cases. With some patients a rest cure in a hospital or nursing home will work wonders. When this is impracticable, modified rest may be taken at home. For the business man afternoons off and week-ends in bed, and for the woman a regular rest period of two hours in the afternoon with more outside diversion, proves helpful.

Many of these patients sleep poorly and can be greatly helped by the use of sedatives, which must be kept up over a fairly long period of time to be effective. Alvarez recommends the use of one to three tablets of carbromal or bromural which do not cause depressing after-effects or skin rashes. We have obtained very nice results in a few cases with a scopolamine, gr. 1/100, at bedtime.

The most useful diet in my hands has been the smooth diet recommended by Alvarez, which supplies a wide choice of foods and yet avoids the rough indigestible articles that so often cause flatulence and other trouble.

The abuse of cathartics is a large factor in many of these cases, interfering with the assimilation of food and increasing peristalsis in a digestive tract which is already irritable. Constipation should be treated by the establishment of a regular habit-time, exercise (particular attention being given to the abdominal muscles) and diet. Cathartics, bran, and roughage diets should be avoided. An enema of normal salt solution, one tablespoonful of salt to one-half gallon of water, may be used daily and

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almost indefinitely without irritation, or a retention enema of one to two ounces of olive oil may be given at bedtime.

As a general principle defective teeth and refractive errors should be corrected. Definite foci of infection should be removed and the general physical condition of the patient should be improved in every way. Frequent contact with these patients is essential as they need constant encouragement and supervision, and at each visit a definite return engagement should be made.

Aside from sedatives, drugs are relatively unimportant, our chief confidence being placed in psychotherapy. Cases associated with anemia are benefited by inorganic iron, a convenient form being a 50 per cent aqueous solution of iron and ammonium citrate in doses of one-half to one dram, or Blaud's pills, ten to twenty grains, after meals.

Some cases of flatulence are helped by belladonna, and we still feel that bitter tonics, such as compound tincture of cardamon, have their place in the treatment of anorexia.

The functional disorders of reflex origin are numerous and the treatment rests with that of the causative agent, as the gall-bladder, pelvic organs, appendix, etc. Obviously, the correct diagnosis is essential if we would avoid the embarrassment of treating one of these cases as a neurosis or as ulcer when the cause is of reflex origin.

The treatment of organic diseases of the stomach is well discussed in any textbook and will be dealt with very briefly.

Acute Gastritis.—In the toxic cases, due to various poisons, in addition to prompt emptying of the stomach and the use of the proper antidote, we should remember that certain substances, such as mercury and arsenic, are resecreted from the stomach after being absorbed and therefore repeated lavage is necessary. The intravenous injection of sodium thiosulphate, 0.5 gm. in 10 c.c. of normal saline, given daily for four or five doses, has been favorably reported by some observers, and is worthy of trial in cases of arsenic or mercury poisoning.

Gastroptosis is part of the picture of visceroptosis and in a great many persons causes no symptoms. In some cases it should receive the treatment appropriate for the neuroses. As an organic disease the name should be reserved for those rare cases showing marked delay in the emptying of the stomach and actual pyloric stenosis. Alvarez is not convinced that visceroptosis is a disease, and probably much harm has been done by the medical profession by planting the idea of a "fallen stomach" in the mind of a neurotic patient.

Peptic Ulcer.—Time does not permit more than a generalization in the treatment of this common and important disease. The Sippy diet, or one of its various modifications, is still most generally used for the first one or two weeks with gradual additions of soft non-irritating foods until, after two or three months, Alvarez's smooth diet may be used. In my experience patients have done much better if kept in bed for the first few weeks, and it is most important that they remain permanently on a non-irritating diet. The use of tobacco should usually be restricted and in some cases forbidden. Regular meal hours, avoidance of physical and mental fatigue, thorough mastication of food, and a rest period after meals are essential in the after-treatment of these cases. These measures are equally important in those cases which have had surgical treatment and cannot be too strongly emphasized, as most patients become careless once they are free from pain. Recurrences may sometimes be avoided by these precautions.

The use of antacids will be taken up under the discussion of hyperchlorhydria. Many cases are made more comfortable by taking a teaspoonful of bismuth before breakfast. If pain persists in spite of the diet and alkalies, the use of an ice-bag is helpful. Belladonna or atropine will also give relief in some cases.

Syphilis of the stomach should receive the treatment appropriate to that of tertiary syphilis, but, according to Harris and Youmans,[3] bismuth or mercury and iodides should precede arsphenamines for several weeks. Perforation has been reported in cases treated vigorously with arsphenamines, without a preliminary course of bismuth or mercury.

Gastric Hemorrhage.—Rest is the first essential, and much may be accomplished in allaying the patient's ungrounded fear of death. Morphine is usually necessary and may be repeated. To increase the coagulability of the blood, Andresen[4] uses 30 to 50 c.c. of a 10 per cent solution of sodium citrate intravenously, or 10 to 20 c.c. of whole blood intramuscularly. He advises cautious increase of the blood volume. Small transfusions of blood—150 to 200 c.c.—are given if imperative.

before the end of the first week. After this, 500 c.c. may be given, as the clot will have become firmly attached. To combat hyperchlorhydria with digestion of the clot, and increased peristalsis, he gives the following solution: gelatin one ounce, lactose three ounces, the juice of one orange, and one quart of water. This is used in amounts of from four to six ounces every one and one-half to two hours. After two or three days, cereal gruel, milk, lactose, and cream mixtures are substituted for every other gelatin feeding. At the end of a week an ulcer diet may be given. As contraindications, he gives the use of ice either by mouth or externally, fasting, rectal feedings, and intravenous administration of fluids.

Another contraindication, not mentioned by this author, is the use of the X-ray for diagnosis soon after hemorrhage. This cannot be too strongly condemned, as it has been followed by perforation and death. A good rule is not to X-ray these patients for at least four to six weeks after hemorrhage, and not until the guaiac test for blood in the stools is negative.

Hyperchlorhydria.—Einhorn[5] recommends a non-irritating diet free from spices, much table salt, concentrated meat juices and soup, strong coffee, and liquors. He allows plenty of milk, butter, eggs, vegetable soups, white bread, and tender meat (once daily) and advises frequent meals, avoidance of worry and business strain. He restricts the use of tobacco and advises fresh air and gymnastics. Loevenhart and Crandall[6] recommend the use of calcium carbonate as the ideal antacid because it is neutral in reaction and does not cause alkalosis; it can be given in almost any amount, as an excess passes out in the feces without any effect on the bowel except to coat over ulcerated areas. It may be conveniently given in compressed tablets of ten grains of calcium carbonate with 1/40 minim of oil of cinnamon, manufactured by Hynson, Wescott & Dunning. One tablet will ordinarily neutralize more than the amount of acid found in the basal or continuous secretion of the stomach.

Achlorhydria.—Simple achlorhydric anemia responds promptly to the use of inorganic iron, according to Haden,[7] Rosenthal and Abel,[8] and others, and antacids are not necessary. These cases should be kept on iron permanently, however, as they will relapse just as pernicious anemia cases do when liver is not given.

Einhorn recommends a diet of cereals, vegetables, milk, stewed fruit, a few eggs, and small quantity of white meat. He advises the avoidance of coarse foods and the giving of frequent small meals.

Symptomatically the use of dilute hydrochloric acid works beautifully in those cases associated with diarrhea, but Dobson[9] recommends its use in all cases of achlorhydria for the following reasons: 1. To act as a stomachic; 2. To form acid albuminates and so aid in proteolysis; 3. To release pepsin from the pepsinogen of the glands; 4. To promote an acid medium for the action of pepsin; 5. To act as an antiseptic; 6. To stimulate pancreatic secretion; 7. To improve tonus and peristalsis; 8. To aid in the solution of insoluble calcium and magnesium salts in the ingesta; and, 9. To stimulate the secretion of hydrochloric acid.

Most of us have given acid in ridiculously small doses, whereas numerous observers have shown that large doses are necessary. Dobson suggests the use of thirty minim doses in two ounces of water, grape juice, or other liquid, to be given at the middle of the meal, and repeated at fifteen-minute intervals for an hour or more afterwards. He also uses pepsin in the form of gastron in one to two dram doses.

For the occasional case which cannot or will not take the acid, we may try the use of two ounces of lemon juice or six ounces of grape fruit juice, well diluted with water and sweetened to taste with sugar, with each meal. Sansum and Gray[10] have reported satisfactory results with this method.

In the presentation of this large subject we have been forced to deal superficially with a number of conditions. Several important diseases, such as cancer, acute dilatation of the stomach, and pyloric stenosis, have been left for surgical consideration. No originality is claimed and material found in various medical publications has been used freely. We have attempted to emphasize the frequency and importance of the functional disorders, and to review briefly some of the more important measures in the treatment of the organic conditions.

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SURGICAL TREATMENT OF DISEASES OF THE STOMACH.*

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The impossibility of encompassing in a period of fifteen minutes anything like a complete discussion of surgery of the stomach is obvious. I shall, therefore, limit myself to some very general principles, dealing especially with the indications for surgical treatment of diseases of the stomach, the pathologic processes which lend themselves to correction by surgical procedures and the physiologic functions which may be restored surgically. For convenience, the diseases and other abnormalities of the stomach will be discussed under several groups arranged according to etiologic factors.

First, however, it must be emphasized that a proper understanding of certain anatomic and physiologic facts concerning the function of the stomach are essential, not only in deciding upon the advisability of employing surgical treatment. but further in selecting the type of procedure to be employed, in preparing the patient for operation and in supporting the patient through the immediate and remote post-operative convalescence. The stomach is more than a temporary food receptacle. Its muscular contractions mix the food with acid and pepsin from the fundus to initiate its digestion. They also propel the food through the stomach while alkaline mucus from the prepyloric portion of the stomach commences the reduction of the relatively high gastric acidity. Finally, the strongly alkaline pancreatic juice, bile and duodenal secretion, partly by regurgitation into the stomach and partly by action in the first portion of the duodenum, complete the essential neutralization.

Injuries. Certain conditions offer obvious and usually immediate indications for surgical treatment. Penetrating wounds of the abdominal wall and certain injuries by blunt force with definite or reasonably presumptive evidence of perforation or other serious harm to the stomach or other viscera necessitate prompt exploratory operation. The phrase "reasonably presumptive evidence" is important. Not infrequently valuable time is lost and prognosis is influenced adversely by temporizing too long in doubtful cases. The operation of choice is the simplest repair possible under the circumstances.

Foreign Bodies. Foreign bodies in the stomach may or may not necessitate surgical intervention. Usually, however, the larger and more irregular or sharper particles do. Certain of them may yield to endoscopic removal; others may require gastrotomy. It is worthwhile to note in passing that straight pins and needles may be delivered by pricking them through the gastric wall and that open safety pins may be closed within the stomach by manipulation and allowed to pass through the alimentary canal, thereby obviating the risk attendant upon opening the stomach.

Syphilis and Tuberculosis. Rarely, two common systemic diseases, tuberculosis and syphilis, may cause lesions of the stomach. It is the ulcerative and cicatricial sequelae of the gastric involvement

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with consequent pyloric stenosis which occasionally require surgical treatment, either directly, the removal of the lesion, or indirectly, the restoration of function by pyloroplasty or gastro-enterostomy.

Congenital Anomalies. Congenital anomalies of the stomach may be found. Diverticulae and partitions are among the intrinsic anomalies and abnormalities in position the extrinsic anomalies, all of which are rare. Congenital hypertrophic stenosis of the pylorus, however, is not uncommon, and here again a word of caution in regard to too long temporization may not be amiss. The Rammstedt operation, dividing the pyloric tumor without entering the lumen of the gut, is eminently satisfactory and, in competent hands, is attended by an almost negligible risk.

Dysfunctions. Functional abnormalities of the gastric mechanism may be sometimes so stubborn that surgical intervention is desirable. It is presupposed of course that the more frequent extrinsic causes—chronic cholecystitis, chronic appendicitis, and other intra-abdominal and systemic diseases—have been precluded as of etiologic significance by appropriate diagnostic and therapeutic measures. Cardiospasm, pylorospasm, and chronic dilatation of the stomach, may necessitate plastic operations on the inlet or the outlet of the stomach, or, as in the case of the latter, some such procedure as gastro-enterostomy in order to provide adequate function of the stomach. When one finds stubborn pylorospasm it is important to recall that hypertrophy of the pylorus with consequent stenosis may occur in adults as well as in infants. I have previously reported three instances of this condition.

Ptosis. Ptosis of the stomach occurs usually in conjunction with general visceroptosis. Operation may be considered but only with the utmost caution and not until all other corrective measures have failed. Reasonable benefit from operation may be expected only in those patients with marked delay in the emptying time of the stomach, usually the result of adhesions or other extragastric factors responsible for a relatively fixed ptosis.

Benign Tumors. Benign tumors of the stomach are not nearly so uncommon as at one time believed. Adenomas and papillomas are the most common, though fibromas, lipomas and other types of benign tumor have been described. Occasionally polyposis occurs. Because of not infrequent chronic or acute hemorrhage, the danger or actual occurrence of malignant degeneration and in rare instances some degree of occlusion of the pylorus by the tumor surgical treatment should be advised for many patients. Local excision of solitary tumors will often suffice, though gastrectomy may be necessary in some instances. In this connection may be mentioned redundancy of the prepyloric gastric mucosa, which may prolapse through the pyloric ring and cause distressing symptoms. In one patient, I made a pyloroplasty in order to correct a condition which on viewing the pylorus from the duodenal side looked like nothing else so much as the anal orifice of a patient with prolapsing hemorrhoids.

Malignant Tumors. Because of their importance and controversial nature, I have on purpose reserved the discussion of gastric carcinoma and peptic ulcer of the stomach until the end. Malignant tumors of the stomach are almost always carcinomatous though in rare instances lymphosarcoma and even sarcoma arising in the muscle may be seen. It is important to remember that lymphosarcoma is radio-sensitive. I have a patient explored three years ago for a very extensive and hopelessly inoperable lymphosarcoma of the stomach who is alive and apparently well today, thanks to radiotherapy. Carcinoma of the stomach is radio-resistant. Radical resection of the tumor is the treatment of choice in all malignant tumors of the stomach.

Carcinoma. A major problem in carcinoma of the stomach is diagnosis, with the importance of very early diagnosis the chief concern. Even at the risk of undue repetition I would emphasize the urgency of, first, the education of the public to seek medical advice promptly for gastric symptoms; second, the education of the physician to recommend competent roentgenologic examination of the stomach in patients with persistent dyspepsia, and, third, the further education of the physician to look upon every proliferative and ulcerative lesion of the stomach as potentially malignant until proved otherwise.

Malignant degeneration of polyps and other benign tumors of the stomach has been demonstrated repeatedly. The frequency of malignant degeneration of gastric ulcer is a controversial subject but, regardless of our opinions in the matter, it is an admitted fact that it is impossible roentgenologically or by any other non-surgical method to demonstrate with certainty whether a given gastric ulceration is

benign or malignant. Although we know that most ulcerations on the greater curvature are malignant while most of those on the lesser curvature, except in the prepyloric region, are benign, we can have no assurance of that fact. Ulceration no larger than a dime but with metastasis to the lmph nodes has been reported from the Mayo Clinic.

Radical surgical measures employed early offer the only hope of cure, but, unfortunately, the majority of patients with gastric malignancy do not come to the surgeon until the disease has progressed so far that extensive spread and sometimes distant metastases have occurred. In many instances a curative operation cannot be even attempted. The choice of a palliative operation, however, is important. Partial gastrectomy where possible, even though accompanied by a slightly higher risk than gastro-enterostomy, is perferable because of the greater comfort afforded the patient. In this connection also, Horsley has pointed out that many patients, in whom the chance of a cure by radical operation seems slight because of the extensiveness of the growth, obtain surprisingly good results by very radical resections, even including in the dissection parts of adjacent organs.

The operation itself may be varied. The Polya or Billroth methods or one of their various modifications are most commonly used. Because it can be accomplished in two separate stages, the Billroth II operation is very useful, especially in patients that are poor surgical risks. The importance of the most radical operation possible performed at the earliest feasible moment cannot be too strongly emphasized. Meticulous pre-operative, operative and post-operative management are presupposed.

Gastric Ulcer. Peptic ulcer and its management is always a source of worry to internist and surgeon alike. Because of the similarities and dissimilarities between gastric and duodenal ulceration it is almost impossible to discuss one without mentioning the other. Both probably have the same etiologic factors but their pathologic differences depend upon anatomical and physiological differences in their respective locations. There is a good deal of evidence, experimental and clinical, to suggest that mechanical factors determine the location of the ulceration, and that mechanical and chemical factors combined determine the persistent chronicity chararcteristic of the lesion. The mechanical factor is the result of the convergence of the lines of force of the contracting and emptying stomach to certain parts of the stomach and duodenum. The chemical factor seems to be, at least partly, uncontrolled acidity of the gastric chyme. The possible neurogenic origin of the motor and secretory dyscrasias presents an interesting field for speculation and investigation. The surgery of peptic ulcer must be based on a knowledge of these physiological facts.

Both gastric and duodenal ulcerations are subject to certain complications—hemorrhage, perforation and obstruction to the outlet of the stomach at the pylorus. Hemorrhage, either recurrent or massive, is usually a definite indication for surgical treatment. It is important to remember that an operation performed primarily because of hemorrhage is usually not adequate unless the ulceration is excised. It has been found that bleeding often recurs if gastro-enterostomy is done without excising the ulcer itself. If excision of the ulceration is for any reason impracticable, ligation of the large vessels supplying the area of ulceration is the next best procedure and should not be omitted when performing indirect operations.

The perforation of an ulcer, unless of more than twenty-four hours duration is an indication for immediate exploration of the abdomen. The sooner the operation is performed the better will be the patient's chance of recovery. The risk increases with each hour of delay. Usually after twenty-four hours or more, the patient is either in too poor condition to stand operation or else there is a walling-off reaction on the part of the peritoneum so that it is safer not to interfere until a definite abscess has formed and simple drainage can be instituted. The surgical management of the perforation will vary with the character and site of the perforation and the condition of the patient. Burning away the ulcer crater about the perforation with the electric cautery and simple closure of the defect is sometimes sufficient. In some instances it is necessary to make in addition a gastro-enterostomy or a pyloroplasty to provide adequate drainage of the stomach. It is a mistake, however, to do more than the exigencies of the situation actually necessitate.

Obstruction to the outlet of the stomach may be due to spasm, acute inflammatory tissue around the ulcer, or to fibrosis caused by a long standing inflammation. The first two varieties frequently re-

spond to medical measures; the last mentioned, however, necessitates surgical intervention. Gastroenterostomy is the ideal operation in this condition, provided, of course, that one is sure that the ulcer, if on the gastric side of the pylorus, is not malignant, in which case a partial gastrectomy is necessary.

The economic and social status of the patients with peptic ulcer, their mode of living and their dietary habits and limitations are important. It may be practically impossible for some to adhere to an adequate medical regimen. For those who are economically unable or not sufficiently intelligent or willing to cooperate, the prescribing of medical treatment is too frequently a waste of time and delays eventual rehabilitation.

The proper management of peptic ulcer is seldom a strictly medical or a strictly surgical problem. It is rather a joint responsibility of the internist and the surgeon, working hand in hand with each other and with the roentgenologist who can give them such important information concerning the behavior of the ulcer.

The disputed relationship between benign gastric ulcer and carcinoma of the stomach I have already mentioned. I would emphasize again, however, that whether we believe that gastric ulcer may undergo malignant degeneration or not does not alter the fact that even the most capabale roentgenologist cannot tell with certainty whether a given gastric ulceration is benign or malignant. Therefore, an ulceration in the stomach might better be considered an indication for surgical treatment until proved otherwise. In young persons with small uncomplicated gastric ulcerations and roentgenologic evidence of response to medical treatment within two or three weeks, surgical intervention would seldom be warranted. As the age of the patient increases, however, the danger of even small gastric ulcerations being malignant increases, and greater caution must be exercised. In the middle-aged or older patient, even the small gastric ulceration, unless it shows roentgenologically prompt diminution in size under treatment, and assuredly the larger ulcerations are potentially malignant and should be excised.

In conclusion, I would emphasize that gastric surgery is a responsibility not to be assumed lightly by any surgeon without an intimate knowledge of its underlying principles. The excellence of operative technic will not compensate for an ill-advised operation or one chosen contrary to the various applications of these underlying principles to the individual case at hand.

DISCUSSION OF PAPERS BY DRS. BOND, SEWARD, ROBERTSON AND MORTON, IN THE SYMPOSIUM ON "DISEASES OF THE STOMACH."

DR. G. F. SIMPSON, Purcellville: To attempt in the short space of five minutes to discuss the splendid papers presented here today would be the height of folly, especially so for a man who is doing and has been doing through all his medical life, country work, away from the centers of education. The essayists have given you papers covering all the phases of this important subject, a concise review of the literature and the scientific work done by all the physicians, I might say, almost, in the land, to solve this important problem.

In the classifications, as outlined by most of the men, they gave two general classifications: first, the primary psychic or neurotic disturbances of the function of the stomach, and, secondly, the organic lesions. These they have divided into various subdivisions. I want to give you just one instance, to show that you may have a psychic or functional condition and an organic lesion in one and the same patient.

A wealthy New Yorker came to the adjoining county of Loudoun and bought a home and established a residence there. Some few years before that he had been attended in one of the larger clinics in New York City for a peptic ulcer. He had been examined thoroughly and carefully by the scientists and successfully treated, and discharged with specific instructions as to what he should do and what he should not do, in order to prolong his life. Special instructions had been given him that a return of the ulcer was a probability in the future, and also that in later life he might develop a carcinoma in the old ulcer scar. Business connections and the necessity of properly educating his only daughter caused him to make periodical trips to London, Paris, Berlin, and Rome. On these trips, due to the importance that the specialists had attached to his condition, he had certain gastric nervous symptoms, and frequently consulted a physician or an internist—once in Paris, once in London, once in Berlin, and once in Italy. They put him through the clinics, in order to determine whether he was developing one of the complications that might follow such a condition. By this time he had become an introvert and a neurotic. He went down with a mild attack of flu, and his wife and family in-

sisted that he go to a clinic in Boston for an examination, in order to find out what was the cause of his nervous condition. Again, the examination was negative. The only fact developed in that clinic was that there was some disturbance of the pituitary gland that might account for his neurotic symptoms. He came home. I was called one night to see a butler who needed some surgical attention. I had treated his family for five or six years. When I came down from seeing this patient, his wife insisted that I come in for a social visit, which I did. He then referred to his physical condition and insisted on telling me the whole story, and did so, finishing with the story of this neurological examination in Boston. He wanted to know what I thought of his condition. I told him there was not a thing the matter with him. He promptly threw up his hands and said: "Why didn't the specialists in London and Paris and Berlin tell me that, Doctor?" I said: "Because they have reputations to maintain, and I, being a country doctor, have not." I made these statements dramatically, in order to impress it upon him. By the way, he was about thirty-eight years old and as fine a physical specimen as I have ever seen. He said: "Do you mean to tell me that I can discard this alkaline treatment and all these other instructions?" I said: "Why not?" He then pulled open a drawer, and I am not exaggerating when I tell you he pulled out two boxes the size of a shoe box, full of capsules, that he had been carrying all over the world with him. He said: "I will give this to you."

Well, time went on; he had nervous attacks sometimes and would come to see me. After about five years I saw him one day, and he asked me to go in the drug store with him. He told me about his travels; he had been to Morocco, Algiers, and other places, and he had taken up flying. I said: "What of your gastric ulcer?" "Oh," he said, "I had forgotten all about that."

The point is, specialists are making neurotics of these patients. You will recall that Dr. Alvarez reported a series of complete gastric analyses of some 3,476 normal people. (I say "normal," but who is normal?) They found that the hydrochloric acid, in certain classes of cases, will vary from nothing up to about sixty in the stomach. They examined two women over the period of a month, making daily examinations, and found a mean variation of between 36 and 40, I think. (I am not giving you exact figures). One of them ran around that for the whole period. The other, about the middle of the month, became highly nervous under some emotional stress, and her's varied from 30 to 60. In the highly neurotic cases, many would have as much as 2,000 units of pepsin in the stomach and were perfectly normal. There is a thought there, that we are dealing with a biological condition. The essayists and other writers have called attention to the biological side. We have done an enormous amount of work, intensive collective work, on individual diseased conditions; but, after all, before we correct these, may it not be necessary for us to consider the individual as a biological being when we are treating these conditions? We have laid a great deal of stress upon examinations by the internist, the surgeon, the roentgenologist, and others, but there has not been anything said at all about the history that we do not have of the men who are doing general work, who, due to their environment and the conditions under which they labor, can not furnish those more highly favored with the material that they have. What would be the picture of our conditions if we had their report?

DR. WRIGHT CLARKSON, Petersburg: I wish to express my appreciation for the invitation to discuss the radiological aspects of this symposium, and also to compliment the essayists on the quality of their respective papers. I particularly wish to thank Dr. Bond for his tribute to Dr. Cannon's pioneer work relative to outlining the gastro-intestinal tract with bismuth subnitrate in 1897.

Perhaps many of you have noticed the statement in Dr. Horsley's new textbook on the stomach, in which he calls attention to the fact that approximately eighty per cent of all gastric symptoms are due to some motor dysfunction.

I feel that we have to consider the physiological aspects of every medical problem if we wish to obtain proper results. For instance, if we do not consider the motor dysfunction of the stomach, it is practically impossible to treat a stomach lesion properly.

A careful roentgen examination is necessary to determine deviations from the normal motor function anywhere in the gastro-intestinal tract, but we must correlate our findings with those of the internist, the surgeon and our other co-workers, if we wish to obtain the best results. Failure is frequently due to a lack of adequate consultation with each other.

I always feel a hesitancy in administering thorium to outline the liver, as has been suggested by one of the essayists, for the reason that sufficient radioactivity to harm the patient may eventually result. I do not think our present knowledge is sufficient to warrant its general use, except in the case of patients that are considered incurable.

The finding of air between the diaphragm and the liver, as may be demonstrated on a roentgenogram, is of great aid in determining a perforation in the gastro-intestinal tract and this sign should always be looked for where the condition is suspected.

The roentgenologist can not differentiate with any degree of accuracy between syphilis and cancer of the stomach; nor can he be absolutely positive that an ulcer of the stomach is not malignant. The latter differentiation should be made with the microscope, and surgeons who are doing stomach work should be very careful to make frozen sections at the time of operation and be guided accordingly.

A careful roentgen examination is, however, a fairly good guide as to whether or not a lesion is benign or malignant. For instance, we know cancer is relatively rare in duodenum and lesions not more than 3 c.m. in

diameter and located on the lesser curvature of the stomach are usually benign, while large lesions, particularly those located on the greater curvature of the stomach, or elsewhere, with signs of considerable surrounding infiltration, are likely to be malignant. So roentgenology gives us these guides and if we find an apparently benign lesion we can afford to treat it medically for a while, at least, but don't forget the large number of people who die of cancer of the stomach in this country every year. I personally feel that no physician is justified in treating even a definite ulcer for a long period of time without a roentgenological "check-up," because unless carefully watched a definite percentage of curable cases will lose their chance for recovery.

Finally, I wish to emphasize the fallacy of depending too much upon one negative roentgen examination. A recent case serves well to illustrate this point. A lady was referred to us with definite gastric symptoms and no lesion could be found fluoroscopically, nor on a series of roentgenograms made immediately following the fluoroscopic examination; but due to the symptoms, she was requested to return later for another examination, at which we found a very definite, though quite small, carcinoma. No doubt, the lesion was present when she came to us the first time, but the gastric deformity was not sufficient to be diagnostic.

May I again thank you for this opportunity of discussing this most excellent symposium.

DR. J. SHELTON HORSLEY, Richmond: If we follow those recommendations of Dr. Morton and look upon every prolonged indigestion as potential cancer of the stomach and, unless the symptoms disappear after a few weeks of treatment, have a roentgenologist skilled in gastro-intestinal work make a thorough examination of the patient's stomach, I believe early gastric cancer will be found more frequently and with prompt operation the death rate should be cut in half in five years.

Dr. Wm. Gerry Morgan, the well-known medical gastro-enterologist of Washington, is not particularly enthusiastic about surgery, yet he made the statement before the Southern Medical Association that every peptic ulcer of the stomach is always a surgical condition. I have had patients in whom peptic ulcer has turned into cancer. We cannot ignore that; if we do, we might as well turn Christian Scientist and say there is no such thing as gastric ulcer or cancer. In those gastric cancers with no symptoms until the late stages, the lesion is in the physiologically silent portion of the stomach. About two-thirds of the stomach is physiologically silent, just as much of the brain is physiologically silent. We know that cancer in the mouth, in the rectum, the cervix, and the skin—regions that can be observed—arises from a preceding benign lesion, as an ulcer or a papilloma. It is logical to hold that this rule applies in regions that cannot be directly observed, as the stomach.

Since the first of July I have opened the abdomens of four patients with cancer of the stomach which proved to be unresectable. Now, I am willing to take just as long a chance as any one else, but I could not do anything in those cases. One of them had been resected by me nearly four years before. That left three. One of those three cases had had gastric symptoms for eight years, another for four years, yet they had just had X-ray examinations made recently. If the X-ray examination had been made a few weeks after the first symptoms, the result might have been different.

Dr. Horsley then showed a few lantern slides of the stomach of a man studied by one of the most competent roentgenologists in a northern city and pronounced inoperable carcinoma. Describing the case, Dr. Horsley said: He had high acid in the gastric juice. I told him that he might have cancer, though I was not certain of it, but we might be able to resect it. Sometimes, even in these roentgenologically inoperable cases, we can do a partial gastrectomy and prolong the patient's life and make him more comfortable. You see there the portion of the stomach removed. It was an extensive peptic ulcer that had perforated onto the pancreas. About half of the stomach and the adherent portion of the pancreas were removed. The patient made a good recovery.

Every patient, particularly one over forty years of age, with gastric symptoms, should be considered most seriously, and the obligation is very heavy on the physician if he continues to treat that patient indefinitely without a competent X-ray examination. The only known effective treatment for gastric cancer is surgical excision.

DR. F. J. WRIGHT, Petersburg: This subject has been thoroughly discussed; all the papers are good. I think every man in the society, every man who does general medicine and special medicine, is interested in gastric symptoms. There is one thing I want to mention here that I do not believe has been mentioned. Frequently the early symptoms of tuberculosis are gastric. Don't neglect to examine the lungs thoroughly before you arrive at a conclusion.

Another thing. For perhaps thirty years I have been intensely interested in peptic ulcer. I had a patient about thirty-three years ago that had a tremendous hematemesis and almost bled to death. She was treated conservatively, got apparently well, and lived for six years symptom-free; then symptoms began to develop that indicated organic pyloric obstruction. Had we known then what we know now, had we had the facilities for diagnosing pyloric obstruction, she would have been living today. As it was, we waited too long. She was operated on by one of the most prominent surgeons in the South, and she died, I think, of an acidosis. Had she even at that late day had the treatment that surgeons give now, especially glucose and salines intravenously, she would be living today.

In most cases of duodenal ulcer and, I might say, gastric ulcer, if they are not too large or too extensive and if there is not too much obstruction (you may have considerable obstruction sometimes that is inflammatory

rather than organic and that is relieved by rest, large doses of belladonna, and the proper diet), the modified Sippy diet has, in my experience, been very satisfactory on the whole. In the last few years I have adopted Seale Harris's plan of adding orange juice, grapefruit juice and tomato juice. I still use some alkalis, the base of which is calcium carbonate. I use belladonna freely if there is pain. Of course, I advise a smooth and non-irritating diet. Many cases, as all of us know, come to surgery, and by the use of frequent follow-up roentgenograms or by fluoroscopy I think we can tell and know in which cases operation is necessary. Of course, if there is perforation at any time they should be operated on.

DR. FRED M. HODGES, Richmond: I think all of us will agree that the most important one point in this whole symposium is the early diagnosis of cancer of the stomach. I shall not discuss the radiological side, but I should like to bring out what seems to me the most important point in the diagnosis. Practically all textbooks on medicine today, and all pathologies too, will give you about nine or ten pages of description of the pathology of advanced cancer of the stomach; and the medical student gets this as his training and goes out knowing that obstruction, Oppler Boas bacilli and a mass in the abdomen mean cancer. They do mean cancer, but they mean, in the large majority of cases, hopeless cancer, cancer that is inoperable. What we should get over to ourselves is that there is no typical cancer history. When a patient in the cancer age has an unexplained digestive upset, that patient should have a thorough examination for cancer.

The responsibility, of course, is up to the general practitioner. If he suspects cancer and has the proper examination made, seventy per cent of these cases can be diagnosed in time for operative removal.

DR. J. BOLLING JONES, Petersburg: I don't think we have heard anything particularly new; we have had simply impressed upon us things we have known all the time. It is like telling our sweethearts every day that we love them. So we must tell ourselves these things every day, so as to keep them in mind. I think it has been recognized for years that gastric ulcer is a purely surgical problem, as opposed to duodenal ulcer.

There are two points that are important. Dr. Morton said that hemorrhage always indicates surgery. Of course, gastric ulcer means surgery, hemorrhage or no hemorrhage. I should like him to tell us what is the immediate indication for surgery in dealing with hemorrhage.

The next proposition is very, very vital to me, and it comes home to every man in this audience. It has been stated, and correctly stated, that the court of last resort for diagnosis is the radiologist. I feel competent to do practically everything else in forming a diagnosis; I think all of us can, with the exception of the roentgenological findings. Dr. Horsley has made the point that those findings should be made by a man thoroughly trained in roentgenology. We have a few men only in the state who are capable of making a thorough roentgenological study of the stomach. Not every man can do it. Now, gentlemen, the question of the economic side comes in. Cancer is no respecter of persons. The matter of the economic side comes in very, very forcibly, when it comes down to a thorough roentgenological study of the stomach. I do not blame my professional brethren; I suppose they have to live, it is true; but we all know that the University of Virginia and the Medical College of Virginia have beds for the poor. It occurs to me that we might make some arrangements. The minute we say "X-ray" to our average patient, he says: "Doctor, I can not do it; I just can not pay the bill." Wouldn't it be possible in some way to take the average poor case—could not something be done by which these gastric analyses for the average person could be made—could not some arrangement be made by which we could get the average person X-rayed at one of these institutions at very small cost? I should like to see something done along that line.

DR. J. CARROLL FLIPPEN, University: It is probably very unorthodox for the chairman to discuss a paper, but I have just a few words I should like to say about this subject.

Digestive complaints comprise a very large percentage of the presenting symptoms for which the patient comes to the doctor. Therefore, the group of patients having indigestion form a very important group. Now, an ideal is impossible, as has been shown. If we want to get early cancer, or if we want to avoid mistakes, these patients have to be put through a rather time-consuming and, in many cases, a rather expensive regime. Now, there are not enough X-ray men in all the United States to examine all the people with gastric symptoms, and not enough machines; and, as Dr. Jones has pointed out, many people are too poor to avail themselves of these facilities if there were enough of them. If we do not have X-ray, we are going to have some embarrassing and unfortunate mistakes; but, as I see it, under the present conditions they are bound to occur. So I would emphasize the careful weighing of the history and observations that can be made in the home and at the physician's office. I think that these cases, with study and care, can be sorted out, and that is the only practical way in which it can be done now. Considering the age groups, we always know that we are in greater danger at certain ages. There are many other factors that have to be considered, but I do feel that that is the most important thing—the careful weighing of symptoms and the careful weighing of physical findings, because in so many of our cases gastric symptoms are due to disease somewhere else in the body.

DR. ROBERTSON: I agree very thoroughly with what Dr. Clarkson said about the importance of being sure of a neurosis before we make the diagnosis. I think it is not a word to be used in front of the patient; I think we should speak of it as a functional disorder

rather than a neurosis, because of its effect on the patient.

DR. MORTON, closing the discussion on his part: I was asked a question about hemorrhage—what type of hemorrhage warrants surgical intervention. Certainly I have never been able to lay down for myself any hard and fast rule. I think the only general observations that can be made are that frequent, small hemorrhages, constantly recurring, would certainly warrant surgery; also a single massive hemorrhage, which indicates the erosion or opening of a large vessel. It is true that granulations may form, the vessel heal over and the immediate danger of hemorrhage subside. But we know that ulcer is a periodic disease. We know that ulcer will go into a stage of further erosion, that some big vessel is there, and that there will be considerable probability of its being opened up again and of the occurrence of another massive hemorrhage. I have seen death ensue, however, in instances which could not be prevented, because the patient was in no condition to stand an operation after the initial hemorrhage or because the loss of blood was so massive and so persistent that it could not be controlled.

I think Dr. Simpson's point about treating the patient rather than the disease is an awfully good one. Many patients with gastric complaints have no organic disease. Whether a victim of organic disease or not, it is very important to consider the patient as a sick person rather than just a case of peptic ulcer or a case of this or that.

What are we going to do to check up on patients with gastric symptoms? It is obviously impossible to have an X-ray examination made on every patient that comes to one's office with some gastric complaint. If so, we would probably be X-raying a large proportion of all our patients. I think, however, that we should observe the rule of X-raying those who have persistent dyspepsia. Rule out the cases of chronic appendicitis, cholecystitis, and so forth, by this means.

I wish to thank those who discussed the papers for their generosity.

FURTHER OBSERVATIONS UPON THE CONTINUOUS INTRAVENOUS INJECTION OF DEXTROSE IN RINGER'S SOLUTION.*

J. SHELTON HORSLEY, M. D.,
Richmond, Va.

One of the many problems that concern both the general practitioner and the surgeon is the dehydrated patient. The dehydration may come from many sources. An excessive output of fluid, as in pernicious vomiting or in diarrhea from enterocolitis, or an insufficient intake of fluid, whether from a natural disinclination to drink fluids or from an inability to absorb them, or a combination of these sources, may cause dehydration.

There are several ways of treating this condition. Naturally, the most satisfactory method would be drinking water. The next would be the absorption of water by proctoclysis. If neither of these methods is possible, the administration of water by hypodermoclysis or by intravenous methods is indicated. In hemorrhage, the demand for water is immediate and urgent.

In shock, with or without hemorrhage, the capacity of the terminal vascular endothelium to retain ciates. of Vanderbilt, showing that traumatic or surthe serum of the blood is diminished and much fluid leaks through into the tissue spaces. Excellent work has been done by Blalock and his associated shock is usually chiefly due to this loss of fluid and not to a hypothetical histamin-like toxic product supposed to be created by maceration of muscle and other tissues.

In all of these conditions the necessity for supplying water and the desirability of also giving the normal electrolytes of the blood together with some nutritive substance, as dextrose, are obvious. If these three things are combined, the patient is in better condition than if only water, which is undoubtedly the most important of the three, be administered. In diseases of the liver carbohydrates are particularly indicated. Incipient or even mild degrees of hepatitis are often difficult to detect. The tests for diseases of the liver are by no means as satisfactory as the tests for the function of the kidneys. The fact that the liver has at least six different functions, all of which are vital, greatly complicates the situation and the retention of bile in the blood as shown by jaundice is too often accepted as the chief or the sole sign of liver dysfunction.

In children who have violent attacks of enteritis, dehydration may come suddenly. Usually when there is an acute need for supplying water, and the

*Read at the sixty-fourth annual meeting of the Medical Society of Virginia, at Lynchburg, October 24-26, 1933.

electrolytes of the blood (sodium chloride, potassium chloride and calcium), the natural method of absorption through the stomach and bowel is not sufficiently rapid and the gastrointestinal disturbance accompanying the disease frequently prevents not only retention of water in the stomach but a satisfactory absorption even if it is retained. It is well known that most of the water taken into the system and a considerable amount of the salt are absorbed from the cecum and the right half of the colon. It has been the subject of considerable dispute whether the colon absorbs any dextrose. Formerly the so-called nutrient enemas were much in vogue. McNealy and Willems have shown that in a dog dextrose is not absorbed through the colon, though water and salt are rapidly taken is incompetent, however, and the nutrient material is carried into the lower ileum, absorption of it may take place to some extent, though this process is more rapid in the upper portion of the small intestine than in the lower.

Ebeling has carried out interesting experiments and reviewed the literature in regard to the absorption of dextrose from the bowel. He concludes that "When a marked dextrose deficit occurs in the blood, dextrose can be absorbed from the colon approximately as rapidly as it can be from a low ileal loop of the non-insulinized dog. The presence of dextrose in the solution in the colon, in the concentration used, causes a retardation in the rate of water absorption. The total amount of dextrose which can be administered and absorbed from the colon under the best conditions would appear to be too small for any considerable immediate therapeutic effect."

Althausen has shown that "In diseases of the liver, insufficient gluconeogenesis causes 'internal' carbohydrate starvation, which results in a reduction of hepatic glycogen, probably largely through depletion of that part of it which serves as a storage form of carbohydrate. * * * Both in experimental animals with hepatic damage and in patients with diseases of the liver, it is possible by administration of suitable amounts of dextrose to relieve the internal shortage of carbohydrate and, as a result of this, to bring about glycogen storage. * * * Dextrose therapy is indicated in all cases of primary and secondary hepatic disease."

It is well known that if an Eck fistula is made in dogs in which the portal vein is united to the vena cava, so sideswitching the portal circulation and carrying the blood absorbed from the intestine directly into the vena cava instead of into the liver, the recovery may be satisfactory and the dog kept in fairly good health on a diet of carbohydrates. If, however, large quantities of meat proteins are given, the dog soon dies, usually with symptoms indicative of a cerebral death. Much interesting work has been done upon this subject, and while the conclusions are not quite definite, it appears to be demonstrated that the liver has a function in detoxicating the protein derivatives of meat which are absorbed through the intestine and which if carried directly into the general venous circulation have a marked toxic effect. It is seen, then, that aside from the value of water for purposes of general metabolism and the importance of dextrose for calories, the dextrose also has a protective effect upon the liver. A diseased liver functions imperfectly and may not be able satisfactorily to detoxicate the products of meat proteins and it becomes essential then to give the liver physiologic rest by supplying a diet of carbohydrates which calls for comparatively little liver activity aside from the storing up of glycogen. Aside from the obvious necessity of supplying water, nutrition and the electrolytes, the protection of the liver and the conservation of its function are extremely important.

In many of the acute infectious diseases, and in the diseases which dehydration accompanies, there may be a hepatitis. Many years ago Evarts Graham demonstrated that cholecystitis is practically always accompanied by hepatitis, and it is well known that marked disease of the kidney is usually associated with some affection of the liver. Insidious lesions of the liver, such as fatty degeneration, may exist without obvious signs for many years, and the occurrence of a crisis such as an accident or a surgical operation may be followed by an unexpected death, when a necropsy will often show the liver extensively impaired. It would be playing safe to assume that in any particular crisis the liver should be protected by supplying not only water and the electrolytes but dextrose.

MacNider, of the University of North Carolina, has shown in interesting experiments that in dogs predisposed toward nephritis the kidneys may be largely protected from the effects of ether anesthesia by the intravenous injection of 5 per cent dextrose in Ringer's solution or by a 2 per cent solution of

bicarbonate of soda in Ringer's solution. The administration of anesthetics by rectum, such as avertin, which is absorbed directly through the portal circulation and passes to the liver, may have an irrigating effect upon the liver. MacNider, while he has done no experiments to demonstrate this point, thinks it is probable that the liver may also to some extent be protected from the irritating effects of the anesthetic by giving 5 per cent dextrose in Ringer's solution.

The value of sodium chloride in the blood is obvious. Haden and Orr have shown that in high intestinal obstruction there is a deficit in chlorides and a rise in the blood urea, and the patient's safety can be greatly enhanced by the administration of sodium chloride. Calcium is also important. Not only does it tend to aid in the heartbeat, stimulating the systole while potassium seems to have a somewhat antagonistic effect in its action on the diastole, but it appears also to lessen the permeability of the vascular endothelium in the smaller vessels and so to retard the rapid flow of fluid from the dilated capillaries into the tissue spaces, which is a prominent feature of shock.

Harry J. Warthen, Jr., of Richmond, Va., has carried on some very interesting experiments concerning the amount of fluid that could be given dogs intravenously. A series of experiments was made in which normal dogs received physiological salt solution, 5 per cent dextrose solution, hypertonic (1.5 and 2 per cent) salt solution and 10 per cent dextrose solution intravenously. Changes in the blood chemistry were noted by determinations of the non-protein nitrogen, blood sugar, and blood chlorides before and after the injection of various amounts of the above solutions.

Large amounts of fluid could be given intravenously within a relatively short time without causing untoward symptoms. One dog weighing 9.5 kg. received 2,000 c.c. of 5 per cent dextrose (slightly more than one-fifth of its body weight) within seventeen minutes, without showing any circulatory embarrassment aside from a marked increase in the pulse rate and a rise in the venous pressure. This is equivalent to thirteen or fourteen liters of fluid for an adult human of average size, or about fifty times the amount of fluid which would usually be injected in the same period of time. The average amount of fluid given to twenty-eight dogs was equivalent to seven or eight liters of solution for an adult weighing 65 kg. Only one dog died, and this was due in part if not entirely to the large amount of 10 per cent dextrose injected without insulin, rather than to the actual amount of fluid given.

The changes in the blood chemistry aside from the diluting effect of the fluid were not remarkable with the exception of the blood sugar after 5 and 10 per cent dextrose injections, which naturally rose markedly depending upon the amount of insulin given to cover the sugar.

This work of Warthen's indicates that a much larger quantity of intravenous fluid can be given normal animals than is usually believed. However, under any circumstances, the general clinical aspect of the patient should be carefully noted and the amount of intravenous fluid regulated.

In reviewing the facts, then, the normal method of administering fluids through the mouth if available is the most satisfactory, but in many conditions this is difficult or impossible, as in some cases of dehydration, in shock, after certain surgical operations, in affections of the liver, the vomiting of pregnancy which also doubtless means an affection of the liver, and in gastroenteritis. The administration of water and salt by proctoclysis is a valuable method and is often helpful, but in enteritis this, of course, is out of the question. Besides, it is doubtful if any dextrose is absorbed through the colon. Dextrose is not well absorbed through hypoclysis, and the intravenous method often seems to be the one indicated.

The intravenous injection of dextrose in Ringer's solution has been somewhat handicapped by the apparent difficulty of the technic of administration and of making the solution. This has been very largely obviated, both in the surgical procedure and in the preparation of the solution. Formerly it was considered that the water must be distilled with meticulous care in a special glass still, usually two or three times, and even then occasionally there would be a chill.

Matas first advocated the intravenous administration of 5 per cent dextrose, as 5 per cent dextrose is about isotonic with the blood. We have added to this, Ringer's solution, which comprises the chief mineral elements of the blood plasma, sodium chloride, potassium chloride and calcium. The advantages of these elements have already been discussed. We have had an ampoule prepared which

contains a concentrate of dextrose and Ringer's solution in such a strength that 100 c.c. of the concentrate in the ampoule when placed in 400 c.c. of distilled water will make 500 c.c. of 5 per cent dextrose in Ringer's solution. The distilled water should be preferably not older than twenty-four hours, though if it is hermetically sealed it may be kept indefinitely. It is made in an ordinary copper still used in the laboratory.

If the solution is permitted to flow at not more than 150 c.c. an hour it may be run indefinitely. This solution may be administered through a hypodermic needle; we use a No. 20 gage, stainless steel needle, one and one-half inches (3.7 cm.) long. If it is to be continued more than twelve or fourteen hours, it is better to run it through a cannula which has ben devised by Guy W. Horsley and me. The lumen of the cannula is large and clear throughout, which lessens the chances of its being stopped up. The base of the cannula is ground to fit an ordinary Luer syringe, and if a transfusion is necessary it can be given through the cannula, and the solution again continued after the transfusion. After operations upon the stomach we usually insert the cannula and keep the solution running for two days or longer. This is less objectionable to the patient than proctoclysis, is readily controlled, and gives an amount of dextrose and calories that could not be possibly administered through the bowel. At the same time it affords physiologic rest for the stomach and intestines. In peritonitis, while proctoclysis is helpful, it undoubtedly stimulates to some extent the peristalsis and consequently to this extent is undesirable in not affording physiologic rest to the bowel, which should be one of the essentials of treatment in peritonitis. The well known danger that follows the administration of purgatives or enemas in acute appendicitis shows the necessity for inhibiting peristalsis and not stimulating it when there is any inflammatory abdominal condition.

We use a buret 54 cm. long in which 100 c.c. of fluid are contained in 9.2 cm. of the length of the buret. The flow can be regulated by a screw clamp from 50 c.c. an hour up to as much as it may be necessary to give quickly when shock occurs. In this way the danger of the entrance of air into the vein is largely obviated, while a constant rate of flow is maintained.

The rubber tubing should be boiled, stretched and twisted or beaten before and after being boiled, and sterile water run through it, in order to remove deposits that may cause a reaction. Special rubber tubing can now be obtained for this purpose. New rubber tubing is boiled for an hour in strong solution of soda, rinsed in running water and then boiled for an hour in tap water. At the end of the tube is a small connecting tip or metal adapter (or nipple) which fits into the hypodermic needle of a Luer syringe. A glass tube is inserted near the end of the rubber tube. All glass used in preparing the solution is pyrex, and new glass is thoroughly washed before using it. The whole apparatus is best sterilized in an autoclave or an oven.

If shock is present, and the blood pressure low, or if there is hemorrhage, the intravenous solution should be run in rapidly, sometimes as much as 400 or 500 c.c. in a few minutes, until the blood pressure comes within ten points of the approximate normal for that patient. In such patients there can be no danger of over-straining the heart, for the heart functions poorly solely because of the need for fluid in the vascular system. In these cases, when the blood pressure becomes nearly normal the solution should be run slowly.

In elderly patients the solution should be given cautiously. If there is a tendency toward raising the blood pressure too much it should be discontinued. In nephritis the solution may be increased to 10 per cent and the Ringer's solution may be omitted. The giving of highly concentrated dextrose as formerly recommended for uremia and for edema of the brain is probably unwise, 10 per cent being sufficiently hypertonic in most instances. In other conditions which have been mentioned, dehydration, vomiting, enteritis, sepsis, liver affections, this 5 per cent dextrose in Ringer's solution is best given over a period of hours or days at a rate of flow of 100 to 200 c.c. per hour.

CONCLUSIONS

In dehydration from any cause, in shock, hemorrhage and the vomiting of pregnancy, in affections of the liver, in intestinal obstruction and in a fistulous opening from the upper intestine and stomach where a large quantity of fluid and of the electrolytes is lost, the intravenous administration of 5 per cent dextrose in Ringer's solution is very valuable. In surgical operations, and particularly in shock or in spinal anesthesia, it is of great help.

In prolonged operations it should be instituted

at the beginning of the operation and the flow regulated so as to prevent the blood pressure from falling too much. It is particularly valuable in spinal anesthesia. If there is marked loss of blood, or if the pressure cannot be maintained in this way, a transfusion of blood can be given through the same intravenous cannula, and the dextrose in Ringer's solution again continued.

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DISCUSSION

DR. R. L. RAIFORD, Franklin: We feel gratefully indebted to Dr. Horsley for summarizing and simplifying the method of giving a remedy which has proven to be of so great value in such a variety of conditions. Since the dawn of modern medicine, there have been very few specific remedies developed and perfected. Many cases in which we have used the combination of Dextrose and Ringer's solution, especially in emergencies, the improvement has been so marked, so positive and so spectacular, that we might well classify this preparation, when carefully administered under proper conditions, as a specific. We first began its use in post-operative cases, but have since gradually drifted into using it in almost all types of cases where there is an urgent need of water and food in the system. We have used it in persistent hiccoughs with most spectacular improvement. Cases of extreme acidosis and persistent vomiting often clear up like magic under its judicious use. We use a smaller burette, with a glass adapter, and regulate the flow by the height of the burette and the size of the needle. A small laboratory still gives us freshly distilled water very quickly. I mention this not as an improvement over the method Dr. Horsley uses, but to bring out the idea that with very simple apparatus you can administer the solution properly almost anywhere, and under almost any circumstances.

In closing, let me say that in desperate cases this remedy will often change defeat into victory and help us to save lives where everything else has failed.

DR. H. J. WARTHEN, Richmond: Experimental work has been done on dogs in which various solutions were injected. The original purpose of this work was to determine the chemical changes that took place after various solutions of sodium chloride and dextrose were injected. It was found that the chemical changes were not so marked; they were largely what one would expect, due to the diluting effect of the fluid. One interesting observation was that the fragility of the red cells was not altered by one of two liters of sodium chloride or dextrose solution being injected in a dog of average size. We became more interested later in determining the amount that could be injected without causing symptoms or death, and increased the amount from time to time, and apparently the only limit was the amount of solution that had been prepared. We did this under local anesthesia, and the dogs were permitted to run around immediately following the experiment and showed no effect except a little awkwardness due to their increased weight. Of course, in humans we would not recommend such heroic doses, but it is comforting to know that we can use large quantities without producing untoward results.

Question—(DR. FLIPPIN): Did any of the dogs show edema after the injections

Answer—No dogs showed evidence of edema.

DR. A. I. DODSON, Richmond: I have found the administration of dextrose very helpful in the preparation of patients for operations upon the hypertrophied prostate. The mortality in this class of patients is admittedly higher during the period of preparation for prostatectomy than following the operation. They frequently enter the ward in very poor condition, badly nourished, dehydrated and often in a condition of mild uremia. The institution of catheter drainage or suprapubic drainage causes a temporary diminution in the kidney function and sometimes an increase in the local infection. The administration of dextrose serves as an excellent means to boost them over this crisis. The continuous administration of dextrose necessitates constant attendance at the patient's bedside. For this reason, in our ward patients in the Hospital Division of the Medical College of Virginia, we customarily give the dextrose more rapidly in amounts of 1000 c.c. to 1500 c.c. once or twice a day, and those

patients with cardiac conditions in whom we are afraid to administer so much fluid at so rapid a rate, we usually give concentrated dextrose intravenously and normal saline by hypodermoclysis.

DR. HORSLEY, closing the discussion: I have been asked who makes the ampoule. I have not enough chemical knowledge to work out the details, but I told a chemist, Dr. Carter, of the Swan-Myer Company, what I wanted and he worked out the chemical details.

Referring to Dr. Raiford's discussion, I am not stickler for any particular method of getting the fluid in. This cannula has been found, in hospital practice, satisfactory, because the solution can be run in more slowly than with the needle. The needle will sometimes stop up, but for a few hours it is satisfactory. If there is marked loss of blood, a transfusion may be given through the cannula.

In edema ten per cent hypertonic dextrose solution without the Ringer's solution may be used.

In patients with high blood pressure, intravenous dextrose in Ringer's is not well tolerated. If the blood pressure goes up and tends to stay up, the intravenous solution should not be continued. Try giving a hundred c.c. an hour, and if the blood pressure does not go up more than ten or fifteen points in a few minutes, or certainly a half hour, it can be used cautiously in that manner.

Patients with prostatism often need this intravenous solution badly and it is very beneficial to them.

It is important to keep up the blood pressure. If a patient goes into severe shock from hemorrhage and low blood pressure he will usually die. In serious operations and in spinal anesthesia, we put in the cannula at the very beginning of the operation and try not to permit the blood pressure to fall more than twenty points below what would be normal for that patient.

CORONARY THROMBOSIS—REPORT OF A CASE WITH SOME COMMENTS ON DIAGNOSIS.*

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Coronary thrombosis in its typical form is one of the most dramatic diseases in the field of medicine. A man in the fifties or sixties may be in apparently perfect health when the disease strikes. Within a few minutes he is in a state of shock with an agonizing substernal or epigastric pain, obviously desperately ill. Most cases of so-called acute indigestion are now known to be really instances of this condition. Physicians seem especially prone to suffer from angina pectoris and coronary thrombosis. Osler[1] lists a number of physicians and other prominent men who have died of angina pectoris. Undoubtedly, coronary thrombosis is the cause of death in most cases that supposedly die from angina. Just recently a former president of the United States and a senator who had been selected for the post of attorney general have succumbed to it.

Long before coronary thrombosis was recognized clinically, pathologists were familiar with it as an infarct or in the later stages as myomalacia. Dock[2] was the first in America to report a case of coronary thrombosis diagnosed ante-mortem and proven at autopsy. This was in 1896. Almost twenty years earlier, however, in 1878, Hammer[3] had reported the first recorded case diagnosed in life and proven at autopsy. In 1912, J. B. Herrick[4] clearly presented the symptoms of the disease in a paper entitled "The Clinical Features of Sudden Obstruction of the Coronary Arteries." Since then papers on the subject have been very numerous. One of the best recent articles summarizing our existing knowledge of the subject is by Austrian.[5] For a more complete account, see the excellent monograph by Levine,[6] which appeared in 1929. Some of the more recent additions to our knowledge of coronary thrombosis are:

1. The possibility of determining by electrocardiograms whether the right or left coronary artery is affected.[7-8] This affects our prognosis, since occlusion of the left coronary is of more serious import than is that of the right.

2. Recognition of the relative frequency of attacks without pain.[9] Often a sudden attack of dyspnea or cardiac asthma is the first symptom.

3. The use of a chest lead (lead 4) in cases with negative or inconclusive electrocardiogram.[10-11-12] In some cases the typical electrocardiogram changes are seen only in lead 4. Katz and Bohning[13] have called attention to electrocardiographic signs other than the coronary T-wave of Pardee. Rapid changes

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in the form of the electrocardiogram are just as significant as the typical T-wave and S-T interval. The electrocardiogram may change markedly in the course of the first twelve to thirty-six hours after an attack.

4. The use of oxygen in the treatment of acute stage. Barach[14] reports two cases where this was undoubtedly a life-saving measure.

The usual clinical picture is very typical: Sudden very severe substernal or epigastric pain requiring large doses of morphia for relief, shock with pallor and sweating, weak heart sounds, heart arrhythmias, a fall in blood pressure, later fever and leucocytosis, sometimes a pericardial friction rub. We should always be on our guard however, for the atypical case. None of the above symptoms are invariably present. The one pathognomonic sign is a characteristic tracing with the electrocardiograph which, when present, clinches the diagnosis, but even this is not always present.

The following case which was followed for three and one-half months and autopsied, presents some interesting features.

J. H. S., age 81, white, male, was seen the morning of December 18, 1932. His complaint was that during the night he had sharp pains in the base of his neck, changing from place to place. His past health had always been excellent. Two years previously he had an operation for a diverticulum of the esophagus on the left side. Since then he has been troubled off and on with uncomfortable sensations in his neck and had thought on several occasions that the old trouble had returned.

He had been under observation for two years previous to the last illness, and on several occasions frequent premature beats with occasional short runs of tachycardia had been noted. The family history was unimportant.

Physical examination showed T. 98, P. 52, apex rate 104, every other beat being a premature contraction. There were occasional short runs of paroxysmal tachycardia. The diagnosis was premature contractions and paroxysmal tachycardia. On the next day the pulse was 72 with only occasional premature beats. The following morning he complained of a sense of pressure in the chest and said he was short of breath. The respirations were 24, and the pulse totally irregular, as was the heart, the rate being 116. There were a few crepitant rales at each base; liver edge not felt; no edema. The diagnosis of auricular fibrillation with beginning congestive heart failure was made. He was put on quinidine sulphate, grs. 4, every eight hours. The following day, fourth day of illness, the pulse and heart were regular, rate 72, breathing was better, color good. On the fifth day, the heart was fibrillating again, respirations were 28, T. 99.5, and he was slightly cyanotic, rales in the lungs were more numerous. Quinidine was increased to 4 grs. every four hours night and day, and digitalis was started. Pulse improved in strength and became slower; heart sounds noted to be soft. On the eighth day pulse was regular, 68, respirations 24; over heart was a wide area of friction rub. The diagnosis was now recognized to be coronary thrombosis, which would explain every symptom and sign. On the eighth day of illness he had a stroke involving the right side. He had evidently had a cerebral embolus from a mural thrombus. Next morning fibrillation was again present, bladder was distended and had to be catheterized. The following note was made on January 4th, eight days after the cerebral embolus:

"Have seen once or twice daily since having stroke. Patient recovered use of right side of body in a few days and the mentality cleared remarkably, being able to understand perfectly well, but unable to speak distinctly; had fever for three days after stroke, then normal. Indwelling catheter removed yesterday; heavy albuminuria and pus, with few blood cells present on urinalysis today. The heart has been totally irregular, rate held to between 80 and 90 with digitalis. This morning for the first time it is regular, rate 72. Nausea and vomiting present today and had diarrhea last night. Digitalis was stopped. Last night while unobserved he got out of bed and walked to the door. Friction rub was only heard two days. Afternoon of the sixteenth day, not as well; more stuporous; temp. 101.5; vomiting everything; faint friction rub over heart; rhythm totally irregular; has probably had second infarct."

He was removed to Virginia Baptist Hospital where he remained for three weeks. Hiccuping and distention were troublesome and almost constant symptoms for two weeks. Cheyne-Stokes breathing was present during most of this time. With infusions and forced fluids his condition improved gradually. One week after hospital admission, the N. P. N. had fallen from 66 to 31 mgms.

per 100 c.c. The pulse had become regular. He recognized people and understood what was said, but could not speak intelligibly A few words and phrases could be spoken, such as "yes," "no," "probably so," "I think so." Otherwise, his conversation was a jargon of syllables that sounded like some foreign language. Certain phrases or syllables would be repeated over and over. He seemed not to know that his speech was not understood. One week after returning home he was sitting up in bed. By the middle of February he was up walking a little. Pyuria was still present; the pulse remained about 70, was regular and of good quality. His speech did not improve. Spells of excitement became very frequent. During these he woulud "talk" constantly for several hours. Sedatives were required. On March 13th the blood pressure was 140/80. On admission to hospital January 4th this had been 150/70. From the middle of March his mental condition grew progressively worse, and he took very little fluids. Heart examination revealed no abnormality except rather soft sounds and a short soft systolic murmur at the apex. The pulmonic second sound was more distinct than the aortic. On April 8th, a few minutes after midnight, he died suddenly.



Fig. 1.—Left lateral view of heart showing size of infarcted area.

Autopsy was essentially negative except for the heart and brain. On opening the pericardium it was found to be adherent to an old blood-clot in the form of a layer one-half inch thick which lined the pericardium all way around. The pericardial sac was filled with about twelve ounces of freshly clotted blood. This was removed and revealed a heart of normal size. The left side was dark in color over an area the size of a man's hand and had a vertical tear in the left ventricle about one and one-half inches in length (Figure 1).

The heart was removed and on cutting through the aorta there was found a small sacculated area in its wall about three inches above the valves; this was cut through on removing the heart, and was evidently a small sacculated aneurysm. It was filled with organized blood-clot. The heart cavity was not opened.

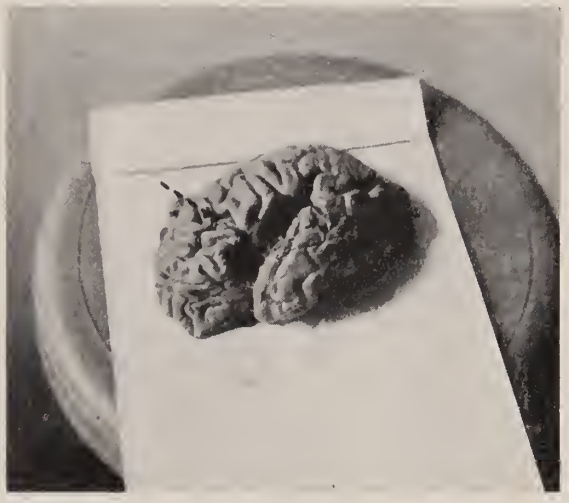


Fig. 2.—Left lateral view of left cerebral cortex; arrow points to area of softening.

The lungs were normal, as were the abdominal viscera. There was moderate arteriosclerosis of the aorta. The brain was removed and showed a depressed, very soft area the size of a nickel in the left cerebral cortex just above the anterior end of the Sylvian fissure—Broca's convolution (Figure 2). The arteries at the base showed marked arteriosclerosis. The brain was not sectioned.

COMMENT

Pain was not an outstanding symptom. No opiate was required. Davis,[9] in an analysis of 165 cases, found 66 (40 per cent) without any history of pain.

Instead of pain the presenting symptom is often a sudden attack of dyspnea. I have recently seen a case that began with an attack of cardiac asthma

without pain. Death occurred suddenly on the eighteenth day.

Cardiac arrhythmia is a frequent finding after coronary occlusion. Frequent premature beats is the most common irregularity, auricular fibrillation next. Both were present in this case. Heart block, and ventricular tachycardia sometimes occur. It is well to consider at least the possibility of coronary thrombosis in any case that suddenly develops an arrhythmia, especially when signs of cardiac failure are present. Ventricular fibrillation is undoubtedly the cause of death in many cases.

Fever and leucocytosis are most helpful signs. They are almost invariably present, although often of slight degree. It is best to take the rectal temperature as a fever will often be recorded when the mouth temperature is normal. Any angina-like attack that is followed in a day or two by fever and leucocytosis, is usually due to coronary thrombosis.

Blood pressure readings were not carefully recorded in this case. The drop in blood pressure is most marked in hypertensive cases. It is not an invariable finding. There may be no drop at all, presumably in cases where only a small area of heart muscle is affected. In cases with shock, the pressure is of course low, rising to some extent with recovery from shock. It may then fall for the next two or three days, later rising with recovery of the cardiac function, though seldom to the former level.

Shock was absent. This and pain are the two chief symptoms, and, both being absent, the diagnosis was not certain until later signs revealed the real pathology. A friction rub is present in 15 to 20 per cent of cases, and should be carefully listened for in suspected cases. It may be present for only a few hours. When present, it is of great diagnostic value.

Dyspnea was well marked, and there were signs of congestion in the lung bases, although peripheral venous engorgement and cyanosis were absent. This is a frequent finding. The reason is probably that in most cases the left ventricle is affected, causing signs of left ventricle failure. The right ventricle is able to function more normally than the left. This causes engorgement of the pulmonary vessels with consequent diminution of the alveolar spaces. The systemic vessels, however, are not engorged, because of lack of propulsive force from the left ventricle. Other factors also undoubtedly play a part.

Embolism is most common from the fourth to fourteenth day. Since the left ventricle is most often involved, it is commonest in the systemic arteries. It occurs in the spleen, kidneys (red cells in the urine), brain or extremities Where thrombus formation occurs in the right ventricle pulmonary infarct may occur. In this case presumably a small embolus lodged in the artery supplying Broca's convolution, the motor speech center.

Rupture of the heart is not an unusual mode of exit for these cases. According to Lewis,[15] it usually occurs from the fifth day to the fifth week. In the case here reported it occurred three and one-half months after the original infarct and three months after the second infarct. He was observed daily and there was no reason to suppose that he had another attack of coronary thrombosis within three months of his death. Sometimes an aneurysmal pouching of the ventricle occurs with later rupture of the aneurysm. There was no sign of this in the present case. The hiccups may have been due to irritation of the phrenic nerve as it passed the pericardial sac. The aphasia present in this case was of the motor type. Speech understanding was unaffected, certainly at first, but proper articulation was affected. The speech center of the brain in right handed people is on the left side of the brain and is not sharply defined, but covers a large area of the cortex above and below the anterior end of the Sylvian fissure. There are different names given to various affections of the speech center, but it is sufficient for practical purposes to classify all cases as either motor aphasia or sensory aphasia. This case is clearly one of motor aphasia since speech understanding (by ear) was unimpaired but speaking was impossible, although the tongue was not paralyzed. The patient could not understand writing or printing, nor could he write.

SUMMARY

A case of coronary thrombosis is reported in a man 81 years old. There was little or no pain and signs of shock were absent, auricular fibrillation and congestive heart failure being the most prominent signs. Cerebral embolism followed by motor aphasia occurred on the eighth day. Death occurred suddenly three and one-half months after the original attack. Autopsy showed an old infarct in the left ventricle with ruptured heart and hemopericardium. There was a soft depressed area

in Broca's convolution in the left cerebral hemisphere.

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DISCUSSION

DR. H. B. MULHOLLAND, University: I think Dr. Scott has presented a very interesting case. One of the most valuable points in the presentation is the fact that the typical symptoms are lacking. In spite of our recognition of typical attacks of coronary thrombosis, with pain radiating down the left arm, or down both arms, autopsy records will show that still a good many cases die of coronary thrombosis without being diagnosed during life. It should be emphasized that in a person over forty years of age with very persistent dyspnea, or sudden onset of dyspnea, we should suspect coronary thrombosis and search for some of the signs brought out in this case—pericardial friction rub, slight temperature, etc. There is one sign that I did not hear mentioned, that is gallop rhythm, especially gallop rhythm appearing in the heart with low blood pressure or falling pressure.

It is very unusual that a man eighty-one years of age should have had an attack of coronary thrombosis and live for three months. Many old people with coronary thrombosis do not die immediately, but a great many of them will die of uremia. Their kidneys cease to function, they put out very little urine, the blood urea goes up, and uremic coma results.

Another point brought out in this paper is the fact that we often find changes in rhythm. Auricular fibrillation, of course, is frequently seen. One case seen recently had heart block and in a very short time apparently had a secondary occlusion and died within about an hour or two afterwards.

I am glad to have heard Dr. Scott present this case, because of the interesting series of incidents, cerebral embolus and rupture of the heart.

DR. N. G. WILSON, Norfolk: The case reported by Dr. Scott is unusual, in that there was none of the usual tearing, agonizing pain under the upper portion of the sternum, the occurrence of which is so characteristic of dissecting aneurysm at the first part of the aorta.

As remarked by Dr. Scott, it is very wise to look for the unusual in the development of this condition. In coronary occlusion, pain may be felt in almost any portion of the chest or abdomen. At the present time I have under observation a man forty-seven years of age, in whom the first evidence of cardiac disease was an attack of acute agonizing pain at the base of the chest posteriorly, extending up and into the neck. This lasted only about ten minutes and was attributed to myalgia. Physical examination immediately afterwards—which, unfortunately, did not include an electrocardiogram—was entirely negative in findings.

Three days later a second attack occurred, the pain being of the same character and in the same location, and it proved to be due to coronary occlusion. A friction rub was heard on the fourth day, lasting about twenty-four hours. There was present also a phenomenon which I have frequently observed in this condition. That is a splitting of the first sound at the apex, which disappeared with improvement in myocardial tone.

With no intention of criticizing Dr. Scott's treatment of this patient, I feel impelled to remark that I have never had the temerity to give quinidine to a patient presenting the condition he describes.

DR. SCOTT, closing the discussion: I thank these gentlemen for their discussion of my paper.

It is true I did not mention gallop rhythm. I think, Dr. Mulholland, the type of gallop rhythm you speak of is the presystolic gallop rhythm, in which the first sound is reduplicated. I think this is probably due to delay in closure of the auriculoventricular valves of the weakened ventricle. I do not know whether that is true, or not.

As to giving quinidine in the beginning, in this man, it seemed that congestive failure was the pressing symptom at the time the quinidine was given; and in a case where we know the fibrillation has been present for only a short while, I do not think we are running any special risk. The danger, of course, is in loosening an auricular clot. In most of these cases the clot is certainly in the ventricle.

It is interesting to note that very often coronary thrombosis seems to run in families. The sister of this patient, who is eighty-four years old, had an attack a week ago of this same condition. Then I have in mind another family, four members of which have had coronary thrombosis. Three have died, and one is still living.

THE X-RAY IN THE DIAGNOSIS OF PERFORATION OF STOMACH AND INTESTINE.*

M. H. TODD, M. D.,
Norfolk, Va.

Acute perforation of the stomach or intestine occurs either from ulceration, or from injury of some sort. It is vital to make the diagnosis in an early stage, long before symptoms of peritonitis arise, such as distention, fever, rapid pulse, Hippocratic facies, etc.

Quite often the early diagnosis of perforation from ulcer is perfectly clear, because the patient has very severe pain, with exquisite tenderness, and a board-like rigidity of the muscles that is impossible to relax, a rapid rise in the leukocyte count, and often an antecedent history of indigestion; and the early diagnosis of perforation from injury may be perfectly clear because of external wounds that show a manifest involvement of the viscera.

But except for the location of wounds, it may be uncertain for many hours whether any intestinal damage has taken place. There may be at first only moderate tenderness, with no change to speak of in the pulse and very little in the patient's general appearance. The wounds may be around in the flank, or in the lower part of the chest, as after attempted suicide; or a knife-wound may or may not have penetrated deeply through the abdominal wall, so that it is quite impossible to say whether the intestine has been damaged or not. Further difficulty is presented by patients who have sustained only a contusion, without any penetrating wound at all; for the clinical findings may be rather mild, and yet perforation may have taken place. More than one man has lost his life from a mule-kick because—in the absence of any very great soreness, or any notable rise in pulse, or change in facial expression for many hours, or a day or so,—intestinal injury has hardly ever been suspected. Of course, later, peritonitis has appeared, with all its signs in orderly sequence, easily diagnosed; but then it has been too late.

In typhoid perforation, there is generally increased pain, as well as suggestive alterations in the pulse and temperature curves; but the patient may be very dull and apathetic, and complain little, so that the question of perforation may be in doubt for some time.

The point I am making, is that the diagnosis of gastro-intestinal perforation is quite often a difficult one to make in an early stage, when it is imperative for operation to be done if the patient is to recover. In case of reasonable doubt, exploratory laparotomy is of course to be performed; but this is undesirable if no perforation exists, because it adds to the patient's burden, which he may be poorly enough able to stand as it is. Faced with this kind of problem, with no aid from clinical signs, what can be done to help matters?

It is in such cases of difficulty that I wish to call attention again to the use of the X-ray. This method of diagnosis has been described by a number of writers, including DaCosta in his recent text; it depends on the fact that when the bowel or the stomach is ruptured or perforated, gas will usually escape from the opening, and float free in the peritoneal cavity, where it can be detected as spon-

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, October 24-26, 1933.

taneous pneumo-peritoneum. The procedure, while well vouched for by good authority, does not seem to have come to the attention of the profession generally, some recent articles on abdominal emergencies not even mentioning it. This is the reason for the present paper.

The method is, in brief, to steady the patient for a moment in the sitting posture, and then take an horizontal X-ray film to show the top of the liver, so that any gas collected under the diaphragm will be clearly seen.

Other ways of detecting free gas are very inaccurate by comparison,—for instance, the attempt to demonstrate loss of liver flatness by percussion, as we were all taught to try to do in typhoid perforation. In such a way, only quite gross amounts of gas can be detected, whereas, a very few c.c. are unmistakeably evident by X-ray, and, further, free gas may be shown very early, even an hour after injury.

In 1927 I recorded my personal experience with the method, concluding that it was very nearly diagnostic, whether positive or negative; though stating, of course, that laparotomy was not to be delayed if collateral signs reasonably indicated it.

Since then I have seen two cases in which no gas escaped at perforation of duodenal ulcer, apparently for the reason that the opening was posterior, and as the patient lay on his back, no gas floated up and out into the general peritoneal cavity. Fortunately, in both cases the clinical signs were unmistakeable, and operation was not delayed for a moment, X-rays being taken only as a possibly confirmatory measure. Perhaps, if such a case were doubtful clinically, it would be proper to cause the patient to turn on his face for a little while, so that gas might more easily escape from the posterior opening.

I recently sent a questionnaire to thirty of the larger Eastern hospitals, asking their opinion of the procedure. There is a curious discrepancy in the replies, which indicate that some hospitals do not know of the method, others find it of help sometimes, while others depend on it a good deal in cases of difficulty. I append a table noting these opinions. On the average, the thought is that where there is gas to be seen in the film, free under the diaphragm, there is perforation; where none is seen, not too much dependence must be placed on the negative X-ray, because perforation may exist anyway. Attention is called to the fact, in three or four well-considered opinions, that gas may not be present in the small bowel, though it usually is present in the large bowel and the stomach.

To conclude with my own present opinion of the method, I cannot help but say that I am personally very much impressed with its value in my own hands, and that I have thus far not been misled in any doubtful case by depending on it. As I said a moment ago, the two cases of perforated duodenal ulcer showing no gas were perfectly clear clinically. In case of doubt, it is necessary to have the film repeated at intervals of a few hours, preferably at the bedside; if then still in doubt, I should operate. This is a laboratory method, and, like all other laboratory methods, must be used with due discretion and reservation.

I wish to call attention to the fact that I am speaking here only of acute perforation,—not the subacute perforation that may occur, for instance, in gastric ulcer. Finally, perforations of the appendix do not permit the escape of gas. The method is of no value in appendicitis.

I should appreciate it very much if those choosing to use the method would advise me some time of their results, so that the true value of the procedure may be arrived at, by common consent.

Replies from hospitals using the method, in summary:

1. Men on service agree that it is an accurate and important diagnostic test; should be used as routine in suspected perforation.
2. No experience except in duodenal ulcer; fine in this condition.
3. Almost invariably present; no analysis of cases.
4. Have used it in questionable cases; of great value and accuracy.
5. Valuable assistance, especially gastric and duodenal ulcer; gas always looked for carefully, impression that it has turned out to be almost pathognomonic.
6. About 70% positive.
7. Valuable if there is time to use it, especially in duodenal perforation.
8. 100% if positive; absence of gas does not rule out perforation.
9. Seems to be accurate in about 75%; not used as routine.
10. Not routine, but frequently used; when positive, can be relied on; when negative, not infallible.
11. By no means constant in perforation; almost routinely used, and in the majority we are unable to demonstrate free air.
12. Helpful at times if present; if absent, without significance.
13. Not more than 60% accurate; not used as routine.

14. Very limited experience; in one or two cases has been of aid; feel that X-ray is not yet developed enough so that much reliance can be placed on it.
15. No one on the service ever requests this examination; vaguely recall its use in suspected perforation of ulcer—not in traumatic cases.
16. Impressed by the literature; but only traumatic perforations have been caused by gunshot wounds, and here the operative indications have been so plain that they have not been checked by the X-ray.
17. Perforation of small intestine not apt to show gas; perforation of colon and stomach more apt to show it; not more than 60% accurate.
18. Accurate in 50% of intestinal perforations, 80% of stomach perforations; of considerable corroborative value.
19. If positive, always means perforation; however, small bowel is usually implicated in injuries, and it usually contains no gas; therefore, don't wait for spontaneous pneumoperitoneum, but operate.
20. Used it principally in attacks pertaining to stomach and duodenum; one of the earliest signs in these abdominal catastrophies; acts as a positive finding in about 70%; useful procedure to differentiate from other calamities. We use X-ray as a check in all acute upper abdominal lesions in which we are at all doubtful about the diagnosis.

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712 *Botetourt Street.*

DISCUSSION

DR. G. PAUL LAROQUE, Richmond: Though we have known of this method of examination for a couple of years, we have not employed it as much as we should have done until recently, for the reason that the first case in which we employed the X-ray did not show the gas in a perforating ulcer of the duodenum. This proved at operation to be a "slow leak," partially closed by exudate and omentum, in which there was not enough air in the cavity to show on the X-ray. We have found in several instances since, when there is a "slow leak" instead of a "blow-out," the air may not show in the X-ray. Where there is a large leak or "blow-out," this can usually be recognized clinically. Our present impression is that where we feel there ought not to be an operation, or in a medical case, such as pneumonia or spider bite, or something like that, before we go to bed we had better have an X-ray made, for fear we might have gas.

We are doing now a great many more of them, and we find them not yet one hundred per cent correct. It may be necessary to improve our technique. If we improve that, we might get the small, slow leaks. We find at the table the small leaks are covered with omentum and are not leaking any longer. This is not true, of course, of larger perforations.

We have not felt it worth while to apply it in bullet wounds, because we think they are operable anyway, and I certainly would not have the courage to wait in a bullet wound. There are, however, some cases is which there is genuine doubt. We do see blunt-force injuries, mule kicks, automobile injuries, in which we would hate to operate unless there is perforation of a hollow viscus. Contusions of the liver and contusions of the spleen, unless there is tremendous injury, do not call for operation, but perforation of a hollow viscus does. In every case of blunt-force injury we have learned to depend upon the air under the diaphragm. Every case of rupture of the stomach or bowel which has occurred from blunt force has shown the air under the diaphragm. Therefore, we are depending upon negative findings there, whereas, in perforating ulcers we are depending upon positive findings.

I think this subject is very timely, and I believe we ought to use this method more than we have been doing.

DR. F. C. RINKER, Norfolk: There is just one point in Dr. Todd's paper which I would like to stress, and that is a condition which is not caused by traumatic puncture of the intestines. I have in mind typhoid perforation. Dr. Todd said there were certain changes in temperature and pulse and called the attention to the possibility of pain, but he did not state anything about the differentiation between hemorrhage and perforation in typhoid fever. Both of these conditions cause a decrease in temperature and rise in pulse rate. The differentiation between the two clinically is difficult, but with the aid of frequent blood examinations, it is not so difficult.

When such conditions are suspected, life may be saved by studying the differentiation of the polymorphonuclear cells in the blood smear, according to Schilling or the Roberts' modification of the Schilling count. I prefer the Roberts' modification because it can be done in the ordinary laboratory with little difficulty.

DR. MARSHALL J. PAYNE, Staunton: I have had experience with just two cases, both stab wounds of the abdomen. The question came up as to whether or not there was visceral perforation. These cases were submitted to X-ray examination, and the report was not perforation of the viscus. I followed out the suggestion, and both cases got well.

In another case a man was at a fair and admitted drinking some wine. He got sick and vomited what he said was blood. It was a rather delicate question to say whether or not he had perforation. I relied on the X-ray, and the results were all right.

DR. TODD, closing the discussion: I was particularly interested to know whether the hospitals in Virginia were using this test. I was in a hospital in Norfolk the other day and asked an intern there if they were using it, and he said, yes, they were using it all the time. I had hoped Dr. LaRoque would say they were using it regularly in Richmond.

I am indebted to Dr. Rinker for his mention of the use of the differential cell count. I am not familiar with that, but am informed it is of much value.

NEO-NATAL SHOCK AND ASPHYXIA.*

WM. DURWOOD SUGGS, M. D.,
Richmond, Va.

The incidence of neo-natal shock and asphyxia and their frequent fatal termination should serve to focus our attention on these two conditions and stimulate a study of the causative factors, the prevention, and a satisfactory plan of treatment. Although rapid advances have been made in recent years in operative obstetrics, obstetric analgesia and anesthesia, prenatal care, etc., this important field has been sadly neglected. Indeed, methods now commonly employed against these complications have changed little since the days of Mauriceau, Chamberlen, Smellie, and Simpson.

In the birth registration area of the United States, including only 87.3 per cent of our population, the Bureau of the Census[1] reported for the year 1927, 82,931 still-births out of a total of 2,220,767 births, or nearly 4 per cent. The number of infants that succumbed shortly after birth increased the combined still-birth and neo-natal mortality to 8 per cent. Holt and Babbit found 4.4 per cent still-births in 9,747 viable infants at the Sloane Maternity in New York.[2]

From the standpoint of etiology these cases fall into three groups: shock and asphyxia due to an interference with the oxygen supply (suffocative asphyxia), compression of the brain (paralytic asphyxia), and circulatory failure.

The various conditions which give rise to interference with the oxygen supply to the fetus are so well known and so generally recognized as to make it superfluous to detail them here.

Compression of the brain due to prolonged labor, to a relative cephalo-pelvic disproportion, to a prolonged second stage with the head pounding against a rigid pelvic floor and perineum, or from inadvisedly attempted and unskilfully executed forceps operations, is a frequent cause of neo-natal shock. Injury or trauma of the cardiac and respiratory centers may act directly by paralyzing the vagus and slowing the heart, thereby diminishing the minute volume of blood flow to and from the placenta, and giving rise to a condition of anoxemia.

Circulatory failure as a causative factor in neo-natal shock and asphyxia to our mind has not been sufficiently appreciated nor emphasized. According to Leff,[3] the mechanism is as follows: During uterine contraction the placenta is compressed and a variable amount of blood is forced out of it into the fetus. This increased quantity of blood in the fetus raises the pressure of the fetal circulation and thereby causes a slowing of the fetal heart in accordance with "Marey's law" which states that the pulse rate varies inversely to the blood pressure. When the uterine contraction subsides, pressure on the placenta is relieved, excess blood flows back to the placenta, the tension in the fetal vascular system is relieved, and the fetal heart returns to normal rate. When the uterine contractions become very strong this process is exaggerated, and, when tetanic contraction occurs, the pressure on the placenta is uninterrupted and the heart does not return to its normal rate. More blood is forced into the fetal circulation, the heart becomes distended, over-loaded, and dilatation with fetal death results. Leff further states that this increased tension of the fetal circulation may cause rupture of the blood vessels, particularly those in the brain, which might in turn bring about a condition of paralytic asphyxia.

Intelligent and successful treatment of respiratory failure depends upon a sound understanding and application of the physiological principles involved. After birth the infant breathes in response to the same stimulus and by the same mechanism as do adults. The initiation, maintenance, and regulation of breathing depends upon the CO_2 brought to the respiratory center by the circulating blood. Oxygen is required to maintain the center itself in a normal condition because no cell, particularly a highly specialized one, can live long when deprived of oxygen, and rapidly degenerates beyond the point of stimulation. Also, the center may be quite normal but at the same time inactive in the presence of an adequate oxygen supply if the blood is deficient in carbon dioxide. Under these circumstances carbon dioxide is the one and only stimulus that will restore and maintain normal activity. Physiologists have discarded the theory that respiration is essentially due to afferent stimulation and have adopted the chemical theory of Haldane and his co-workers.[4]

In order to insure a minimum degree of shock

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and asphyxia, it is possible and proper to follow certain precautions and adopt certain prophylactic measures during the conduct of labor and immediately following birth.

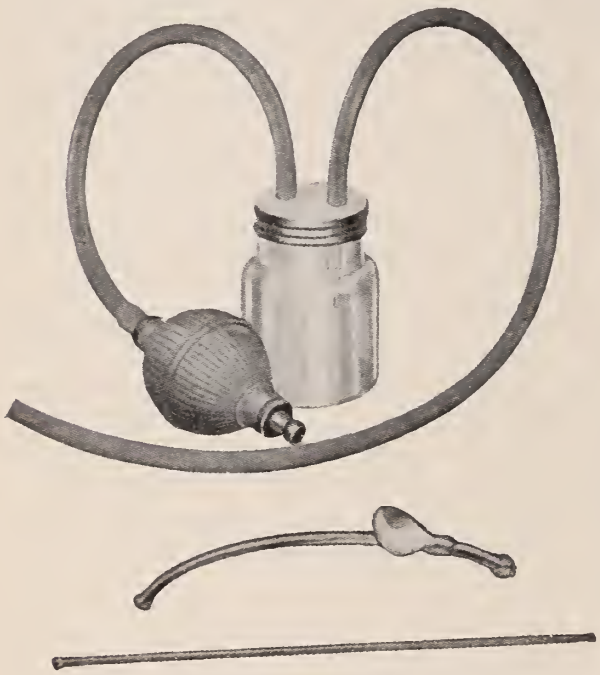


Fig. 1.—The Flagg hand suction apparatus for aspiration of the nasopharynx and trachea. The pharyngeal and intra-tracheal attachments are shown.

Certain analgesics and anesthetics employed during labor have a depressing effect upon the infant. Morphine is most notorious among these and should not be used within three hours before labor is expected to be terminated. It is important to bear this in mind in preparing a patient for caesarean section. The various derivatives of barbituric acid which are becoming so popular as analgesic and hypnotic agents seem to have little or no depressing effect upon the the vital functions of the infant. Nitrous oxide and oxygen mixture, unless contraindicated, is the ideal anesthetic when deep anesthesia is employed.

Frequent auscultation of the fetal heart furnishes a reliable index to the condition of the fetus. Except in breech presentation the passage of meconium is a late sign of fetal distress. Prompt measures should be instituted to rescue the endangered child rather than wait too late, as is often the case. In many cases of prolonged or hard labor we can anticipate fetal shock before any signs appear and terminate labor while the infant is still in good condition. It is our firm conviction that low and outlet forceps can be employed to shorten the second stage, with a great deal less shock and trauma to the infant than allowing the head to be pounded against an unyielding pelvic floor and perineum over any extended length of time. A critical survey of the observations made by Murphy and Thorpe[5] in their study of respiration in the new-born fails to indicate any pronounced difference in the respiratory rate, minute volume, and mean tidal air in infants insofar as the method of delivery is concerned, whether birth was spontaneous or facilitated by axis-traction forceps. This does not mean to imply that a difficult instrumental delivery does not often bring about a condition of shock and asphyxia but a possible explanation for these findings is that some of the infants born spontaneously and in poor condition should have been delivered earlier by some operative procedure. In the occiput posterior position of the vertex, or in the presence of errors in flexion and asynclitism, termination of labor by forceps or podalic version and extraction is often safer for the child than a prolonged second stage. In breech presentation, decomposition and extraction as soon as the cervix is completely dilated minimize the danger of asphyxia from compression of the cord which is so frequently seen in the prolonged second stage of these cases. The Piper forceps for the delivery of the after-coming head has done a great deal to diminish the trauma and shock attending breech extraction.[6]

The pathologic physiology involved in asphyxia, although intricate in its relations, follows a definite sequence of events which under logical treatment is comparatively simple. It must be remembered that we are dealing primarily with a condition of shock as well as respiratory failure. Immediately upon delivery the child should be grasped by the feet and suspended head down. The chest is then gently compressed between the thumb and forefingers of the other hand as recommended by Prochownick, in order to squeeze out any mucous or foreign matter in the bronchi. The neck is then gently stroked toward the mouth to free the upper air passages. Any mucus or foreign material remaining in the oral or nasal cavities should be carefully aspirated. If we are dealing with an aftercoming head, the air passages should be cleared as soon as the mouth and nostrils appear at the vulva. The infant should now be carefully but quickly examined to determine the degree of shock or asphyxia present. The con-

dition of the heart-beat, color, muscle tonus, and reaction of the pharyngeal and "sucking" reflexes will give this information. If the mother is anesthetized, CO_2 should be administered to her before the cord is tied in order to stimulate the fetal respiratory center. As a prophylactic measure against atelectasis, secondary respiratory failure, and pneumonic conditions, it is of utmost importance to clear



Fig. 2.—Simple type of apparatus recommended by Henderson for administering various mixtures of O_2-CO_2.

the air passages before the infant gasps, if possible; and under no circumstances should artificial respiration be instituted before this has been done. The importance of keeping the infant warm is not generally appreciated. The skin is damp, evaporation is rapid, causing a fall of body temperature, further depression, and increasing the degree of shock. Further treatment depends upon the degree of shock and asphyxia we are dealing with. Mild cases respond to simple methods; severe cases require heroic measures.

One of the most simple and time-honored maneuvers is mouth-to-mouth insufflation. Probably the earliest reference to its use that appears in the literature is found in II Kings, chapter 4[4]:

"And when Elisha was come into the house, behold, the child was dead and laid upon his bed.

He went in therefore, and shut the door upon them twain and prayed unto the Lord.

And he went up, and lay upon the child, and put his mouth upon his mouth and his eyes upon his eyes, and his hands upon his hands: and he stretched himself upon the child; and the flesh of the child waxed warm.

Then he returned, and walked in the house to and fro; and went up, and stretched himself upon him: and the child sneezed seven times, and the child opened his eyes."

Elisha's method was scientific. He applied heat: he did not man-handle the child; and he inflated the lungs with a fair amount of CO_2 (3 to 5 per cent). In employing mouth-to-mouth insufflation, only the gentlest force should be used as there is considerable danger of rupturing the delicate pulmonary alveoli. De Lee[2] recommends inflation through a tracheal catheter. In spite of the apparent ease with which De Lee employs the catheter, it is a difficult and dangerous procedure in the hands of most of us. Complications that arise from its use are the production of a false passage with emphysema and pneumothorax and rupture of the alveoli. There is no way of accurately controlling the pressure, and it has been proven that it is possible to blow air through the pulmonary system into the heart and general circulation.

In administering CO_2 a 6 to 10 per cent O_2-CO_2 mixture is recommended. Henderson has recommended a simple apparatus,[4] consisting of a cylinder containing the O_2-CO_2 mixture to which is attached a reducing valve for accurate adjustment of the gas mixture which flows through a vertical water filled tube in such a way that gas escapes when a maximum pressure of three inches of water is reached. The gas flows through a tube leading to the mask which is so calibrated that the flow of gas cannot exceed one liter per minute. A small infant-size closed mask, with or without a bag reservoir attached, is used. The lungs are expanded by gently compressing the bag, or by closing the escape tube leading from the mask. This method is applicable and gives satisfactory results in mild cases of asphyxia provided that the air passages are not obstructed. The apparatus is also very useful in dealing with secondary respiratory failure.

In severe cases of respiratory failure and shock we cannot afford to waste valuable time by using inadequate and inadvisable procedures. In these cases the air passages are almost always blocked down to and including the bronchi. If the obstruction is not quickly removed and O_2 and CO_2 delivered to the alveoli capillaries, the respiratory center will be depressed by the anoxemia beyond the point of come-back. The high right heart pressure, low left heart pressure and reduced cerebral circulation attending atelectasis will not be corrected until the alveoli have expanded and allowed the pulmonary circulation to function. Aspiration of the mouth, pharynx, and nasal passages is insufficient in these cases. Direct laryngoscopy and bronchoscopy is necessary.



Fig. 3.—The Infant Model Drinker Respirator.

Flagg[9-10-11] has designed an apparatus and described a technic which in our hands has proven eminently satisfactory. Indeed, we believe it is the only method by which many infants can be saved. The equipment consists of the following: (1) A hand suction outfit with pharyngeal and intratracheal attachments which develops a negative pressure of from 40 to 60 mm. of Hg. (2) A tank of O_2-CO_2 mixture with a reducing valve and pressure gauge attachment. (3) A specially constructed water manometer twenty-two inches high which affords a means of limiting the pressure at any point up to 44 mm. of Hg. Aspiration from the manometer is prevented by a safety valve. (4) Pharyngeal and intratracheal insufflation tubes through which the gas flow is regulated by an opening controlled by the thumb. (5) A laryngoscope consisting of a detachable speculum with bulb and a handle containing the battery.

Flagg's technic is simple and effective. The infant is placed on its back. The head is extended by having it project slightly over the edge of the table. The mouth is held open with the thumb and forefinger of the right hand. The illuminated speculum is passed over the tongue which is pressed against the floor of the mouth until the epiglottis is exposed. The hypopharynx is now in full view and any secretion can be aspirated under direct vision. The lip of the laryngoscope is now passed just beneath the epiglottis. If the reflexes are sluggish, the intratracheal suction tube is passed into the trachea which is then aspirated of all fluid and mucus. Assured now that the air passages are cleared and that the danger of forcing foreign material into the smaller radicals of the bronchial tree is minimized, we proceed with the administration of the O_2-CO_2 mixture. The intratracheal tube is connected directly with the manometer in which the water level has been set at the desired height. Under direct vision, with the aid of the laryngoscope, the intratracheal tube is inserted. The flow of gas into the trachea is controlled by alternately opening and closing the escape valve on the intratracheal tube with the thumb at the rate of thirty to forty times per minute so as to simulate normal respiration as closely as possible. When the pharyngeal reflexes have become active or have not been depressed in the first place, the pharyngeal tube is used. The O_2-CO_2 mixture is administered until normal respiration is initiated.

Drinker[12] has designed an infant model of his well-known respirator for treating conditions associated with respiratory failure, and, along with Murphy and others,[13-14-15-16-17] has advocated its use in conditions of asphyxia and shock in the new-born.

This apparatus consists of a metal chamber of ample proportion to accommodate an eighteen pound infant. In the head end of the chamber is an eight-inch opening over which is placed an adjustable, snuggly fitting rubber collar through which the head protrudes. The cover of the respiration chamber is hinged and, when closed, is air tight. Tubular electric lamps installed within the chamber provide adequate illumination and maintain the temperature at approximately 95 degrees F. By means of an electrically driven air pump and valve arrangement, changes of air pressure are induced within the respirator. This is recorded by means of a

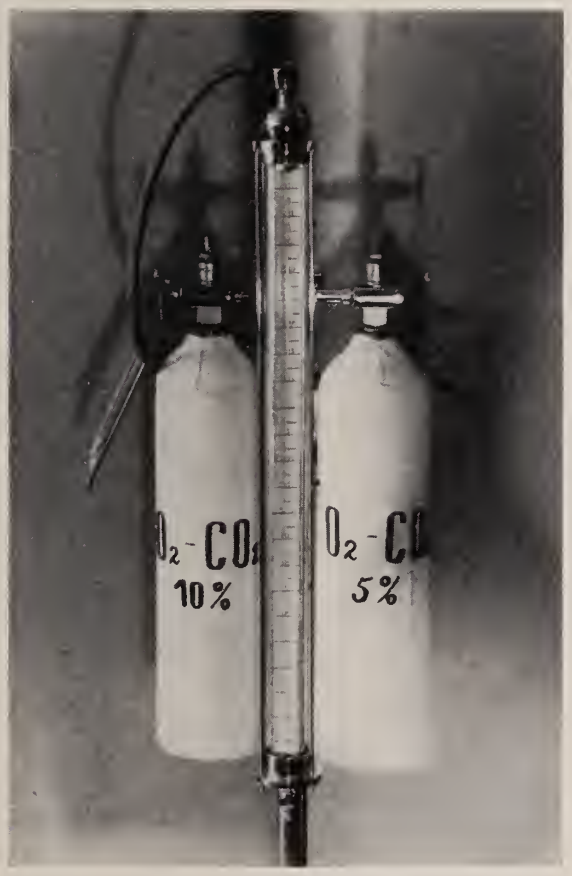


Fig. 4.—The Flagg apparatus: showing the special manometer and laryngoscope. Accessories are shown in Fig. 1.

water manometer which registers the pressure being applied at each respiration. Any respiratory rate desired from thirty to sixty-five per minute and any depth of respiration from 0 to 25 cm. can be obtained by adjusting a control dial. Moderate degrees of accurately measured negative pressure are made to alternate rhythmically with atmospheric pressure. When negative pressure is applied, air enters the respirator through the nose, mouth, and trachea; it is drawn into the lungs, and the chest expands. When the negative pressure within the respirator returns to normal, the elastic recoil of the chest produces expiration.

Two important provisions for the treatment of asphyxia are lacking in this apparatus—a satisfactory method of clearing the air passages, and provisions for administering CO_2. Murphy *et al* clear the naso-pharynx by means of suction through a soft rubber catheter, but direct laryngoscopy with a means of clearing the trachea is unquestionably the method of choice. An infant whose respiratory center is deeply depressed will often fail to respond to insufflation with air but requires CO_2 as a stimulus. This can be administered very effectively by means of the apparatus recommended by Henderson[4] while the infant is in the respirator. Indeed, these two machines used in conjunction, furnish a very satisfactory method for managing these cases. We are not quite as enthusiastic as Murphy in the use of the Drinker apparatus in treating cases of primary asphyxia and shock, but have found that it is more useful in the treatment of secondary respiratory failure, particularly in premature infants. The respirator makes an excellent incubator and a satisfactory degree of pulmonary ventilation can be maintained for hours or for days, if necessary.

Following resuscitation, the asphyxiated infant should be watched closely for the first twenty-four or forty-eight hours, as secondary respiratory failure not infrequently occurs. Henderson[7] states that even the normal infant should have a ten-minute inhalation of O_2-CO_2 three times daily during the first three days of life as a prophylactic measure against atelectasis and pneumonia. This hardly seems necessary under normal circumstances, since the new-born infant ordinarily cries sufficiently to keep the lungs expanded. However, this procedure should certainly be carried out in cases of either primary or secondary respiratory failure in premature infants.

Certain ancient procedures designed to revive the new-born are still widely practiced. Most of these are to be condemned in the light of our present knowledge of the physiology of shock and asphyxia. If we were called upon to treat an adult suffering with shock as a result of some traumatic accident, or asphyxiated or suffocated from any cause, we

would not think of exposing the naked body to the cold, swinging the body by the arms in circles over our heads, bending the body until the head and feet were made to meet, vigorously beating it with our open hand, and finally plunging it alternately into hot and cold water. Instead, we would proceed in accordance with the well-known principles of the management of shock, supplying warmth and inducing rest. A new-born infant, even under the most favorable conditions, is subject to a great deal of trauma during labor, and almost always is suffering from some degree of shock, depending upon the difficulties of the passage through the birth canal. To be beat, swung, and exposed in such a condition not only decreases the chances for survival but often inflicts additional injury, as autopsies on still-born infants so treated have revealed fractured ribs and ruptured viscera. New-born, so treated, often survive in spite of, not as a result of, this type of treatment.

SUMMARY

Neo-natal shock and asphyxia are frequent obstetric complications, being a large determining factor in the neo-natal mortality rate of nearly 8 per cent for the entire country.

The physiology of this condition and the mechanism it follows is discussed.

Certain older methods of resuscitation involving severe man-handling of the infant are condemned, not only as being useless, but as being distinctly harmful.

Certain prophylactic measures are suggested, and several methods of dealing with varying degrees of asphyxia and shock are outlined and compared. The important principles to be observed are—maintenance of body heat, clearing the air passages, and administering carbon dioxide and oxygen.

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PRIAPISM.*

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Priapism as defined by Keyes is a condition of prolonged erection independent of the will or emotion of the patient. It is a symptom rather than a disease and usually indicates and accompanies a condition of grave importance. The priapism may be transitory or of prolonged duration, in which latter event there is loss of sexual desire and pain follows after twenty-four to forty-eight hours. The condition may be encountered by anyone practicing medicine no matter what field he is interested in, especially by the physician in general practice, and as persistent pain is always present it is important to know what can be done to relieve the sufferer. Fortunately there is a simple procedure which can be carried out easily in the home or office, bringing rapid and usually permanent relief to the patient and which will be described more fully in discussion of the treatment.

Many cases of priapism of prolonged duration have been reported, with a long list of causes, some of which are rather bizarre in nature. The most common basic cause from an anatomical standpoint is thrombosis of the return venous circulation of the penis and deep pelvic veins, while this in turn is the result of several predisposing factors.

Cases have been reported as due to local irritation, such as phimosis, urethritis, fissure in ano; or to more remote sources as nasal polypi. It has been known to accompany general systemic disease, such as diabetes mellitus, typhoid fever, leukemia and cancer. Excessive doses of aphrodisiac drugs, such as tincture of cantharides and yohimbin, have led to prolonged priapism. Following sexual excess there is sometimes an engorgement and thrombosis of the corpora cavernosa resulting in painful priapism. Fractures of the spine, myelitis, tumors of the spinal cord, syphilis of the central nervous system, fractures of the skull with cortical irritation sometimes are the etiologic factors in priapism.

Scheidegger in 1932 reported two cases coming to autopsy with priapism remaining after death, in which cancer of the rectum with extensive venous thrombosis was found to be the cause in one and intoxication by excessive doses of yohimbin causing it in the other. The latter case was one of the few reported in which the engorgement predominated in the corpus spongiosum, as this is almost invariably found predominant in the corpora cavernosa. Hughes in 1932 reported a case following excess in drinking and sexual relations, which was relieved spontaneously in twenty-three days, and a second case in a young man shot through the lower abdomen who had a priapism of twelve days' duration in whom autopsy revealed an extensive cellulitis and thrombosis of the pelvic veins. Craver, in the Surgical Clinics of North America in 1933, discusses priapism as a complication of leukemia. He says that, although it is a rare complication of both types of leukemia, nevertheless, of the published cases due to all causes, 33 per cent to 40 per cent of them accompanied leukemia. He does not think pressure from enlargement of the spleen or glands is the sole cause, although some cases have improved following suspension of the spleen by addominal binder. He reports a case, the only one seen at Memorial Hospital, New York City, since 1918, in a series of 100 male patients with leukemia. Although aspiration of blood from the corpora cavernosa was tried, he attributes subsidence of the priapism to treatment of the spleen by X-ray. Impotence followed disappearance of the priapism which, according to the literature, is the usual sequel.

In treating priapism it is of utmost importance to recognize the fact that it may be a result of serious disease, and, consequently, a thorough diagnostic study should be made. It is all right to direct one's attention to the immediate relief of the patient, but this must by no means overshadow the importance of making a correct diagnosis. Often the priapism is the presenting symptom with no particular evidence of the underlying pathology apparent, as was the case in the two patients to be reported in this paper. Treatment, therefore, should be directed, first, to the disease causing the priapism, and then to subsidence of the erection. The usual drugs, such as bromides, luminal and other sedatives, are used with some slight benefit, mostly to

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calm the patient. Morphine and codeine may be used for pain. Spinal anesthesia, ether and chloroform will not reduce the priapism. As a matter of fact, spinal anesthesia sometimes causes a semiflaccid erection. Huhner reports the successful treatment of six cases by epidural anesthesia, but these were not of the severe type requiring operation. The most successful treatment from the standpoint of immediate subsidence and relief of the patient, is incision into the corpora cavernosa on both sides under local or general anesthesia with expression through the enlarged openings of old dark blood and blood clots. The incisions are best made with a sharp bistoury plunged into the shaft near the junction of the penis with the body—well to each side to avoid striking the large dorsal artery and vein. The incisions may go deeply in, but care must be taken not to go through to the corpus spongiosum for fear of incising the urethra. The length of the incisions may vary from one to two centimeters. After the incision is made a rather profuse flow of a mixture of bright red and old dark blood will occur, but if a blunt Kelly clamp is carefully introduced and opened, several good sized blood clots can be extravasated with the aid of slight pressure. Danger of excessive bleeding is not great except in the cases of leukemia where packing and even suturing may be necessary. Instead of the above procedure, aspiration with a syringe and needle may be used but complete evacuation, especially of large blood clots, cannot be as successfully accomplished as with incision. Patel reported a case of priapism developing three days following the onset of acute articular rheumatism, in which spinal, epidural and ether anesthesia produced no beneficial effect. Twenty-one days after onset he made incisions, evacuating large blood clots with almost immediate and permanent relief. Chalier, in discussing Patel's paper, referred to a case he reported in 1914 of two weeks' duration following post-typhoid phlebitis, which he successfully treated with incision and which he thought was the first case so treated. Section of the pudic nerve has been advocated and used with success, but it must be remembered that this precludes the possibility of future erections and that there is usually some incontinence and dribbling of urine afterwards.

During the past three years two cases have come under observation which are here reported.

Report of Cases

Case 1.—B. K.; age 4 years, white, male, admitted to the Elizabeth Buxton Hospital June 19, 1930. His mother stated that for one month he had become progressively weaker and that beginning with this weakness she had noticed some enlargement of glands in his neck and groin. Two days before admission to the hospital he had an erection upon awakening, and on admission this had become quite painful. His past history was essentially negative.

Physical Examination: Reveals an anemic white male child, lying in bed apparently quite uncomfortable. Temperature 100°; pulse 110; respiration 24.

Head: Negative. Neck: There are several enlarged glands of the neck. Teeth good. Tonsils hypertrophied. Chest: Lungs: Apparently normal. Heart: Rate increased. Apical systolic murmur. Abdomen: Soft, flat. No masses, distention or tenderness. Spleen palpable.

Genitalia: There is general edema of the entire penis. Small amount of sloughing. Penis is erect and stays so. Some edema of scrotum.

Glands: General glandular enlargement.

Extremities: Negative.

Laboratory: Urinalysis shows faint trace of albumin, few erythrocytes, few pus cells and casts. R. B. C. 2,680,000; W. B. C. 473,000; Hb. 40 per cent; P. M. N. 3 per cent; small lymphocytes, 96 per cent; large lymphocytes, 1 per cent; normoblasts present. Blood Wassermann: Negative.

Operation: Under ethylene anesthesia, after cleansing the skin with alcohol, ether and mercurochrome, two lateral incisions, 1 cm. long, were made over the corpora cavernosa at the base of the penis. Several drams of old, dark blood were evacuated, after which the blood became natural in color and the bleeding was quite profuse. It was necessary to take three deep sutures on either side to control the bleeding. This procedure relieved the priapism immediately.

Subsequent Course: The erection returned partially but never as marked as before operation and the pain was relieved. Under X-ray therapy his spleen and glands subsided and his W. B. C. went as low as 61,000. He left the hospital fourteen days after admission improved as to his leukemia and with no evidence of priapism. He returned in one week, and, although his W. B. C. had increased

markedly, he had no priapism. He received further X-ray treatment, but except for a few remissions the W. B. C. increased, the highest being 925,000. He was discharged in twelve days and died at home some weeks later. He had no return of the priapism.

Case 2. L. E. D., colored, male, age 23 years, meat packer, admitted to the Elizabeth Buxton Hospital September 17, 1933.

Present History: Patient states that he awakened eight days ago with an erection of the penis. This condition has existed continuously since that time, though he has been seen and treated at intervals during the past week with hot applications to the perineum as well as internal medication. He states that the night before onset of trouble he had intercourse. He also states that in the past he has had an erection which existed for several hours at the time. Since the erection began patient has been able to void normally and complains of no pain from the penis except when he moves. He gives no history of urethral discharge or urinary symptoms.

Past History: Patient states he received "shots" for blood disease some years ago.

Physical Examination: Well-developed negro, age 23 years, lying quietly in bed.

Temperature 101°; pulse 110; respiration 20.

Head normal in contour. Pupils react to light normally but very sluggishly to accommodation. Thorax: Not abnormal. Blood pressure: systolic 150, diastolic 90. Abdomen: Apparently normal. Genitalia: There is marked erection of the penis, with moderate tenderness upon motion. Reflexes: Knee jerks hypo-active.

Laboratory: Urinalysis shows 3 plus pus. R. B. C. 4,630,000; W. B. C. 6,650; P. M. N. 68 per cent; small lymphocytes, 28 per cent; large lymphocytes, 4 per cent. Blood Wassermann, 4 plus; spinal fluid Wassermann, negative. Spinal fluid cell count: 38 small lymphocytes per cu. mm.; globulin: trace. Smear: No tubercle bacilli seen. Stool: negative.

Treatment: On night of admission spinal anesthesia with 50 mgms. of procaine hydrochloride was given, which had no effect upon the priapism. While under this anesthetic an incision about 2 cms. long was made in each corpora cavernosa and several old blood clots and dark blood were extravasated. The priapism immediately subsided to a semi-flaccid state, but the erection returned in about forty-eight hours. In view of the spinal fluid cell count, luetic meningitis was suspected and two spinal punctures with withdrawal of spinal fluid to relieve pressure were done at two-day intervals. As the erection persisted, a second spinal anesthetic was given and openings were made at the site of the previous incisions and again several old, dark, blood clots were removed. As there was not excessive bleeding, two very small rubber tubes were placed in each incision to keep them from closing too early and to continue drainage of old blood. Anti-luetic treatment had been started in the form of neo-salvarsan, and three days after the second operation the patient left the hospital with only a very slight congestion of the penis. He returned in about two weeks, and, except for a low grade infection in the wounds, he was perfectly well. He was last seen two months after discharge from the hospital and was apparently quite well, having returned to work. He has had no erections since. His anti-luetic treatment is being continued.

CONCLUSIONS

Two cases are reported in which priapism was the symptom bringing the patients to the hospital for treatment. One complicated a case of lymphatic leukemia, and the other was the result of syphilis of the central nervous system.

The importance of attempting to make a proper diagnosis is emphasized, as the priapism is usually a symptom of serious disease. Incisions into the corpora cavernosa give immediate and usually permanent relief and are recognized as the most satisfactory type of treatment. This may be done under local, general or spinal anesthesia.

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Buxton Clinic.

BIRTH CONTROL, A SOCIAL AND ECONOMIC NEED.*

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The increasing frequency with which topics of this general nature are being presented in medical meetings, in meetings of other scientific groups, in the resolutions passed by various church assemblies, as well as in popular articles, indicates a growing realization of the seriousness of the population problems which face us in America.

In the early stages of the human family, infanticide was widely practiced and was thought to be the right and proper means of limiting the size of the family. Even in relatively recent times certain peoples disposed of unwanted infants, especially when food was scarce.

When, with growing enlightenment, infanticide was finally tabooed, abortion came into vogue and, as is only too well known, is very extensively practiced today. It is stated by students of the subject that there are over a million abortions induced annually in the United States. When one contemplates the significance of this state of affairs and the large number of women whose lives are lost on account of it, the thought is appalling.

That so many women should take such risks in order to terminate pregnancies which, for one reason or another, they deem undesirable, places a serious responsibility upon society and upon the medical profession in particular.

Let us consider a few fundamental biological facts and some of the ways civilized man has upset nature's population balance. Within the last century the death rate has shown a more rapid trend downward than ever before—a trend out of all proportion to the down trend of the birth rate. When immigration ceases to be a major factor in population increase, as is now the case in the United States, and the death rate, due principally to the triumphs of preventive medicine, has reached an almost undreamed of low mark, then there must be a normal decrease also in the birth rate to avoid over-population and its attendant economic problems.

In pre-vaccination days in the old world smallpox carried off hundreds of thousands annually. During the fourteenth century the "black death" or bubonic plague is estimated to have killed one-fourth of the population of Europe. The tuberculosis death rate in the United States has been reduced by half in the past half century. The infantile diarrheas have been largely controlled through a safer milk supply and better feeding methods for babies. Diphtheria has been largely robbed of its terrors; typhoid, malaria and yellow fever are under control. The average length of life in the United States is now 58—an increase of about sixteen years within this century. These are some of the factors profoundly influencing our population trends.

Among certain classes of our people, small families are now the rule, with one, two, and rarely as many as four children. This shows that those elements of society which should be furnishing the intellectual, moral and political leaders of tomorrow are being outnumbered by those who, from the standpoint of heredity, may be biologically incapable of furnishing such leadership.

Voluntary birth control or limitation of family size is already fast coming to be the accepted and approved practice in certain elements of society, but unfortunately not with those elements where it is really needed most. A comparative study of the size of the families of doctors, lawyers, college professors, statesmen, as against those of certain economically submarginal members of society is disconcerting to the student of sociology. The following quotation from a publication of the Human Betterment Society of California is to the point: "Strong, intelligent, useful families are becoming smaller and smaller." Irresponsible, diseased, defective parents, on the other hand, do not limit their families correspondingly. There can be but one result. That result is race degeneration.

"The law of self-preservation is as necessary for a nation as for an individual."

"When families that send a child to an institution for the feeble-minded average twice as large as families that send a child to the university, it is time for society to act."

*Read before the South Piedmont Medical Society, at Danville, Va., November 28, 1933.

WHAT CAN BE DONE?

As has already been stated, voluntary birth control is being practiced extensively among certain classes of our American people. Unfortunately this is true mainly of those families which from an eugenic view-point are already too small, whereas voluntary limitation of the size of the family at the other end of the intellectual and economic scale is not being practiced.

There is ont outstanding, practical, humane and scientifically sound procedure which, if properly administered, will go far toward changing this alarming trend toward racial deterioration. This procedure is so called "eugenic sterilization for those types manifestly unfit for parenthood."

Twenty-seven states now have laws authorizing, under adequate safe-guards, this procedure for persons legally committed as feeble-minded or insane. Virginia's eugenic sterilization law was passed in 1924 and its constitutionality has been upheld in the United States Supreme Court. Up to 1933, however, only 479 men and 854 women, a total of 1,333 cases, had been sterilized.

California, the leader in this field, has performed this operation on 8,504 persons legally adjudged unfit for parenthood.

Quoting from "Sterlization for Human Betterment," by Gosney-Popenoe, we find:

"Experience everywhere demonstrates that the successful application of eugenic sterilization depends largely on an educated public opinion and the conservative administration of sound laws.

"The need for conservative, sympathetic, and discriminating use of such a measure in selected cases has been widely recognized as imperative since research began to bring forward more exact facts about the problem which confronts the American people.

"Careful studies indicate that there are 6,000,000 in the United States who have been, are now, or at some time will be legally committed as insane to state institutions. The number who suffer equal mental disease sufficient at some time to incapacitate them for work but who are never legally declared insane is about as great, making 10 per cent of the population, or 12,000,000 persons subject to mental disease in one of its most serious forms. Altogether apart from the undesirability of perpetuating such forms of mental disease, it needs no argument to maintain that many of this vast number should not have children either for the welfare of those children or for their own welfare, not to mention posterity.

"But these 12,000,000 mentally diseased persons are not the whole story. There are 6,000,000 additional who, though not mentally diseased, are so deficient in intellect, with an endowment in this respect that is more than 30 per cent below the average that they are often described as feeble-minded.

"Such handicapped persons are subject to exploitation, likely to get into difficulties with law enforcement officers, and certain to contribute more than their quota to the ranks of delinquency and crime, and much more to those of dependency and pauperism.

"Many of these defectives will never produce children, from natural reasons. It goes without saying that protection of the individual and of the race by sterilization would apply only to those defectives who are likely otherwise to produce children which they could not care for and who would be incapable of becoming self-sustaining, good citizens. In any humanitarian program for the latter group, that will enable them to find their proper place in the community and keep out of trouble, sterilization will often prove to be indispensable, because practicable, harmless, and certain in its results."

AMERICA'S BURDEN

"This, then, is the situation which America faces now: 18,000,000 persons who are or at some time during life will be burdened by mental disease or mental defect, and in one way or another a charge and tax upon the rest of the population.

"It challenges every thoughtful person.

"The misery resulting from insanity and feeblemindedness provides the first reason for grappling with the problem. No stratum of society is immune from such suffering.

"The economic burden is tremendous and steadily growing worse. A billion dollars a year would be a low estimate of the cost of caring for these unfortunates, either in or out of institutions. The cost to the community of those who are not cared for—who are furnishing a large part of the staggering crime bill and the losses due to accidents—is much greater.

"It is estimated that about one-seventh of the total revenue of our own state goes for the care of the insane, epileptic, feeble-minded and for the inmates of jails and almshouses.

"Finally, what sort of a government can be ex-

pected—what progress can be looked for—when so large a part of the voters are mentally abnormal?"

Briefly summarizing then the practical aspects of this problem, we see:

1. An existing trend toward over-population.

2. An already marked and disproportionate decrease in the birth rate, deliberately planned, among those elements of our population from which we must expect to develop the leaders of the future.

3. An increase in those elements of our population from which are most likely to come our criminals, paupers and never-do-wells, epileptic and insane of the future.

4. Manifestly these latter groups will not practice contraception measures on account of ignorance, religious prejudice, indifference, or an attitude of fatalism.

5. Organized society in America then *must* protect itself by means of eugenic sterilization applied in the most humane method possible if it is to be saved from the unhappy results of biologic degeneration.

6. It is a scientifically sound procedure, safeguarded by law, approved by common sense, a *protection* and *not* a punishment.

The second phase of this subject deals with the question which frequently physicians must face as to whether to furnish contraceptive information to physically and mentally normal people. As you probably know, the present Federal Law prohibiting physicians from giving contraceptive information is based on the idea that information about sex matters is obscene (the so-called Comstock laws). Repeated efforts to have this antiquated law repealed have failed. House Bill 5978 and Senate Bill S-1842 now pending before Congress propose changes in this law whereby physicians will be empowered by law to use their own judgment where, for social and economic reasons, it is manifest that the number of children in a given family should be limited by contraceptive measures. All of us have frequently observed the tragedy of the mother over-worked, frequently under-nourished, with seven, eight, perhaps ten children, facing the prospect of another pregnancy which she feels physically and morally unable to face with hope.

It is known to be a fact that in countries where planned limitation of the size of families has come into vogue, the effect has been strikingly beneficial in—

First, reduction of the maternal death rate.

Second, reduction of the infant death rate.

Third, reduction in the number of induced abortions.

Fourth, betterment in the economic status of many families on account of limitation of the number of children.

Whether or not doctors are still alarmed by any real or fancied threat of socialized medicine, here is a field at least in which physicians should have their thinking socialized and in which they should be real leaders for the good of society and in the interest of the coming generation.

DEATHS FROM DIPHTHERIA DIRECTLY PROPORTIONAL TO PERCENTAGE OF IMMUNIZATION.

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At the end of each school year the Division Superintendents of Schools report to the State Department of Education the number of children immunized against diphtheria. These reports for 1933 indicate that 41 per cent of the rural school children in the State had been protected against this disease.

The accompanying table shows in the first column the per cent of school children immunized, in the second column the number of deaths from diphtheria for 1933, while in the third column are starred the counties or cities exceeding the average diphtheria death rate for the State. The final report may show a few changes in the deaths.

Of the 148 deaths from diphtheria in rural Virginia last year, 112 occurred in twenty-six counties, all of which counties had less than 50 per cent of their school children immunized.

Dividing the counties into three groups according to the percentage of school children immunized

COUNTIES	Per cent school children immunized, 1933	Number deaths from diphtheria reported, 1933	Diphtheria death rates * above State average 0 below State average
Accomac	42	0	0
Albemarle	30	1	0
Alleghany	.....	.....	.....
Amelia	61	1	*
Amherst	4	1	0
Appomattox	51	0	0
Arlington	57	1	0
Augusta	45	2	0
Bath	51	0	0
Bedford	51	0	0
Bland	50	0	0
Botetourt	17	0	0
Brunswick	46	0	0
Buchanan	37	6	*
Buckingham	58	0	0
Campbell	40	3	*
Caroline	19	0	0
Carroll	68	1	0
Charles City	62	0	0
Charlotte	56	1	0
Chesterfield	100	1	0
Clarke	67	0	0
Craig	71	0	0
Culpeper	28	4	*
Cumberland	90	0	0
Dickenson	58	3	*
Dinwiddie	34	3	*
Elizabeth City	41	0	0
Essex	41	0	0
Fairfax	91	2	0
Fauquier	14	2	*
Floyd	13	0	0
Fluvanna	98	0	0
Franklin	7	2	0
Frederick	18	4	*
Giles	14	3	*
Gloucester	48	0	0
Goochland	56	1	0
Grayson	11	3	*
Greene	51	1	*
Greensville	81	0	0
Halifax	39	3	0
Hanover	11	1	0
Henrico	74	1	0
Henry	30	5	*
Highland	12	0	0
Isle of Wight	75	1	0
James City	63	0	0
King and Queen	30	0	0
King George	75	1	*
King William	38	0	0
Lancaster	37	0	0
Lee	48	3	*
Loudoun	52	1	0
Louisa	66	1	0
Lunenburg	28	0	0
Madison	65	0	0
Mathews	4	0	0
Mecklenburg	45	0	0
Middlesex	26	0	0
Montgomery	64	1	0
Nansemond	87	1	0
Nelson	.....	.....	.....
New Kent	40	0	0

COUNTIES	Per cent school children immunized, 1933	Number deaths from diphtheria reported, 1933	Diphtheria death rates * above State average 0 below State average
Norfolk	49	1	0
Nottoway	48	0	0
Northampton	69	0	0
Northumberland	46	2	*
Orange	71	0	0
Page	18	4	*
Patrick	12	3	*
Pittsylvania	23	5	0
Powhatan	52	1	*
Prince Edward	48	3	*
Prince George	31	0	0
Princess Anne	32	2	*
Prince William	39	2	*
Pulaski	39	3	*
Rappahannock	63	1	*
Richmond	62	1	*
Roanoke	26	4	*
Rockbridge	53	4	*
Rockingham	29	4	*
Russell	45	8	*
Scott	13	4	*
Shenandoah	21	0	0
Smyth	31	7	*
Southampton	66	1	0
Spotsylvania	79	0	0
Stafford	54	0	0
Surry	61	1	0
Sussex	22	2	*
Tazewell	12	6	*
Warren	42	0	0
Warwick	52	0	0
Washington	20	10	*
Westmoreland	46	0	0
Wise	36	4	0
Wythe	15	3	*
York	18	0	0
CITIES			
Alexandria	40	1	0
Charlottesville	11	0	0
Danville	32	4	*
Hopewell	88	0	0
Lynchburg	45	3	0
Newport News	33	0	0
Norfolk	42	3	0
Petersburg			
Portsmouth	10	2	0
Richmond			
Roanoke	28	6	*
Staunton	43	0	0
Suffolk	70	1	*
Winchester	6	4	*

against diphtheria, we find that in the first group having 75 percentage immunization, there were twenty deaths from this disease. The second group has 43 percentage immunization with forty-nine deaths, while in the third group there was only 19 percentage immunization with seventy-nine deaths.

Thus it is clear that the number of deaths in a community correspond closely to the per cent of school children immunized.

A few counties and cities are omitted in the table because the statistics were incomplete.

Correspondence

An Opinion on the Federal Emergency Relief Administration.

RICHMOND, VA.,
MARCH 15, 1934.

TO THE EDITOR:

Upon inquiry, I find that the Public Relations Committee of the Society did not hand in for publication the reports it presented in the House of Delegates at our last annual meeting, in regard to the Federal Emergency Relief Administration. Following the reading of the reports, however, a resolution was adopted disapproving of the plan proposed for the payment of physicians on a fee schedule basis for care of the indigent sick.

As I am opposed to the resolution, I wish to ask the following report presented by me to the Public Relations Committee on October 19, 1933, and known by the Committee as the "Minority Report," be published in the MONTHLY:

To the Members of the Public Relations Committee:

In my judgment the Medical Society of Virginia should cooperate with the Emergency Relief Fund Administration as has been adopted in the State of Kentucky. My reasons for this are as follows:

1. The situation is an emergency act, which may last for a year or longer, but it is still distinctly an emergency and not a permanent policy.

2. This act will, to my mind, be chiefly beneficial to general practitioners and particularly to the country practitioners who are probably most in need of some help because of the economic condition of the farmers. I was raised in the country and at the beginning of my professional career I practiced medicine in the country, and I can fully sympathize with the country general practitioners.

3. I see no reason why doctors cannot fully cooperate with the local relief organizations of the local medical associations, and at the same time accept from this Emergency Relief Fund, without necessarily the knowledge of the patient, some compensation for their services, whereas otherwise they would receive no compensation.

4. Diversion from this Fund to make up hospital deficits may diminish the amount of funds that would otherwise be distributed to the general practitioners over the country. If additional funds for the hospitals can also be obtained, it would be most desirable, provided this does not reduce the amount made available for the general practitioners. Deficits on account of services to charity patients may also be made up by local measures in each particular community. It seems obvious that, if other things are equal and a charity case can be treated at home about as effectively as at the hospital, the compensation for medical treatment of such cases at home would relieve the hospital of much of the financial burden of charity cases.

I would suggest that the Committee and the Delegates hear from Dr. Draper, the Health Commissioner of Virginia, and from Mr. Smith, who is the representative of the Emergency Relief Fund, before coming to a final conclusion.

That participation in this Emergency Relief Fund is considered advisable by the authorities of the American Medical Association is shown from the following extract from an editorial in the *Journal of the American Medical Association,* of September 23, 1933:

"According to a rule promulgated June 23rd, by the Federal Emergency Relief Administration, State emergency relief administrators must provide adequate medical service for persons on relief rolls. Money granted to the States from the Federal emergency relief fund may be used to pay for medical services and supplied for patients in their homes. All hospital expenses must be paid for from State or local funds. Federal money is not to be used to support existing medical, dental and nursing relief services, but only to augment those services. State and local relief agencies are expected to operate through agreements with the organized medical, dental and nursing professions, State and local. Within legal and economic limitations, the traditional relations between patients and their physicians, dentists and nurses are to be maintained. Professional services rendered patients on relief rolls must be of the same type as those rendered private patients and are to be paid for at agreed rates, due allowance being made for the observation of relief funds. The common aim, as stated by the administration, is the provision of good medical service at low cost, to the benefit of the indigent patient and the physician, nurse, dentist and taxpayer."

In my judgment, participation in this Relief Fund in such an emergency cannot be other than helpful to patients and to the medical profession.

Respectfully submitted,
J. SHELTON HORSLEY.

Public Health Statistics

WARREN F. DRAPER, M. D.
Health Commissioner of Virginia

Among the communicable diseases reported to the State Department of Health during March, 1934, were the following cases: Typhoid and paratyphoid, 13; Diphtheria, 121; Scarlet fever, 204; Measles, 6,911; Meningitis, 23; Poliomyelitis, 4.

The number of cases of typhoid and paratyphoid reported from the following counties were: Accomack, 2; Alleghany, 1; Buchanan, 1; Elizabeth City, 1; Lee, 3; Northampton, 1; Pittsylvania, 1; Scott, 1; Warren, 1; Washington, 1.

Epidemic Meningitis was reported from: Accomack, 1; Albemarle, 1; Brunswick, 1; Culpeper, 2; Dickenson, 3; Essex, 1; Floyd, 1; Fluvanna, 1; Giles, 2; Rockbridge, 1; Rockingham, 2; Russell, 2; Smyth, 1; Tazewell, 2; Warren, 1; Norfolk City, 1.

Diphtheria was scattered in 41 counties and 7 cities.

Scarlet fever was reported from 51 counties and 9 cities.

MEASLES. Many cases of measles continue to be reported weekly to the State Department of Health. During March, 1934, measles was reported from 82 counties and 9 cities with a total of 6,911 cases. Consistent with the tri-yearly cycle, 1934 is the year for an epidemic in Virginia. In 1928, there were 20,460 cases reported. In 1931, there were 17,974 cases. From January 1 to April 1, 1934, there have been 12,160 cases reported in Virginia with 1,618 cases during the week of March 17th. This disease has become quite pandemic. During the one week ending March 17, 1934, the U. S. Public Health Service reported 33,049 cases in 46 states.

Undoubtedly, many cases of measles are not reported due to the fact that they have not been seen by a physician and also due to continued lack of information on the part of many parents to the need of calling a physician. Parents do not realize that with measles, as with chickenpox, nearly 100 per cent of susceptible children exposed will develop the disease, and do not realize the danger of complications. During January and February, 1934, seventeen deaths occurred in Virginia as a result of measles.

Protection against measles may be secured if, during the first four or five days after exposure, an individual is inoculated with a sufficiently large dose of convalescent serum This produces a passive and temporary protection which may last for two to five weeks and the attack of measles due to such exposure may be entirely prevented. However, it leaves the individual as susceptible to measles as before the injection. It is desirable that babies still in the first two years of life be given this complete protection.

When injected intramuscularly, five to six cubic centimeters of serum from a recently convalescent patient, bled from five to ten days after defervescence, will ordinarily protect a pre-school child and ten cubic centimeters will protect an older person. When the serum of an adult who had measles in childhood is used, two to three times this amount is necessary. Consequently, twenty to thirty cubic centimeters of parental whole blood injected deep into the buttocks may mitigate a case of measles and the child may suffer a mild case, but he thereby acquires active immunity against measles, which should last for life. The use of human serum is, to-date, the only recognized specific method of controlling outbreaks.

New Members

Since our annual meeting in Lynchburg, the following are names of new members who have been added to the roll of the Medical Society of Virginia:

Dr. J. Edward Amiss, New Market.
Dr. Harloe Bailey, Rural Retreat.
Dr. James P. Baker, Richmond.
Dr. Allen Barker, Petersburg.
Dr. Clifford H. Beach, Richmond.
Dr. L. Nelson Bell, Tsingkiangpu, China.
Dr. J. B. H. Bonner, Beaumont.
Dr. M. F. Brock, Norfolk.
Dr. H. C. Brownley, Lynchburg.
Dr. Mason B. Caldwell, Wytheville.
Dr. Paul D. Camp, Richmond.
Dr. Hawes Campbell, Jr., Hanover.
Dr. Alexander N. Chaffin, Galax.
Dr. John E. Collier, Richmond.
Dr. P. Q. Daniel, Deltaville.
Dr. Edwin F. Gouldman, Colonial Beach.
Dr. J. E. Haynsworth, Buckingham.
Dr. Joseph Horwitz, Richmond.
Dr. William R. Jordan, Richmond.
Dr. Charles F. Kincheloe, East Falls Church.
Dr. Alfred M. Palmer, Clarendon.
Dr. Minor B. Payne, St. Charles.
Dr. Richard M. Reynolds, Norfolk.
Dr. Edward B. Richey, Lynchburg.
Dr. Churchill Robertson, Roanoke.
Dr. Wade H. Saunders, Fincastle.
Dr. Ernest L. Stebbins, Richmond.
Dr. Clifton R. Titus, Bassetts.
Dr. Meyer Vitsky, Richmond.
Dr. Ennion Williams, Richmond.

Woman's Auxiliary, to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

Reports from Auxiliaries.

NEWPORT NEWS AUXILIARY

The Newport News Auxiliary to the Warwick County Medical Society held its first annual meeting at the home of Mrs. W. S. Snead, the president, on March 7, 1934. We celebrated this meeting with a luncheon given in honor of Mrs. W. L. Harris, of Norfolk. Mrs. M. N. King, of Norfolk, was also present. A color note of green and yellow was carried out, even to the little individual "birthday cakes" with a single lighted candle.

We had a large number present, including some of the Doctor's wives, from Hampton, who have decided to combine with our Auxiliary but to work as a distinct group. This group will have Mrs. B. E. Hunt for president, and Mrs. J. J. Cullinan for vice-president.

We have worked under the four following groups during the past year: health lectures in the public schools; prenatal; cooperating with the visiting nurses' association; and cooperating with the Cosmopolitan Club in checking upon glasses for school children.

Since we organized, we have handled quite a number of prenatal cases, and have furnished nursing service and medical attention. We have also furnished layettes. In addition, we have started a linen chest containing three dozen sheets and three dozen pillow cases to be loaned to various patients.

At the meeting, Mrs. Harold Potter was elected president-elect, and Mrs. W. O. Poindexter, historian.

The meeting really was a delightful one.

MRS. C. B. COURTNEY,
Publicity Chairman.

JAMES CITY-NEW KENT AUXILIARY

The Woman's Auxiliary to the James City-New Kent Medical Society met at the home of Mrs. L. V. Henderson in Toano, Va., Monday, March 12, 1934.

It was decided there would be no election of new officers, the old ones remaining in office another year.

The program consisted of an article from *"Hygeia"* by Mrs. T. B. Henderson, of Williamsburg, the subject being "Full Speed Ahead, Kills". There was also an article taken from *"Time,"* by Mrs. A. M. Snead, of Toano, the subject being "Tularemia".

The meeting was adjourned and lovely refreshments were served by the hostess.

MRS. J. R. TUCKER, *President.*

RICHMOND ACADEMY OF MEDICINE AUXILIARY

The Auxiliary to the Richmond Academy of Medicine met at the Library Building on Friday, April 13th, at 3:30 P. M. The new president, Mrs. J. B. Stone, presided.

Plans were discussed for the raising of funds to assist in the Academy's new project, the establishment of a pathological museum. That finally decided upon was the sponsoring of a theatrical performance which will take place in May.

An honored guest at this meeting was Mrs. J. N. Hunsberger, of Norristown, Pa., a past president of the national organization. Mrs. Hunsberger gave a helpful and inspiring discussion of various phases of work which may be undertaken by local organizations.

Tea was served after the session which has been changed to the afternoon, with the hope that more members will find it convenient to attend and enjoy a social hour after the business session.

National Meeting.

The annual meeting of the Woman's Auxiliary to the American Medical Association is to be held in Cleveland, Ohio, June 11th to 14th. Mrs. James Blake, of Hopkins, Minn., is president, this year, and she and the local committee are doing everything possible to make this a banner meeting. The Carter Hotel has been selected as headquarters. This is located just two short blocks from the Statler, hotel headquarters for members of the A. M. A. Make your plans to attend and get the vision of this splendid group of women.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted:

Hoffmann-La Roche, Inc.
Tablets Digalen—Roche, 1 Cat Unit

National Drug Co.
Scarlet Fever Streptococcus Toxin for the Dick Test (National), fifty test package.
Typhoid-Paratyphoid, a Vaccine, thirty 1 c.c. ampule-vials package.

Parke, Davis & Co.
Ortal Sodium
Capsules Ortal Sodium, 3 grains (0.2 Gm.)

Sheffield Farms Co., Inc.
Sheffield B. Acidophilus Milk.

John Wyeth & Brother, Inc.
Ampoule Solution Dextrose 25 Gm. in 50 c.c.
Ampoule Solution Dextrose 50 Gm. in 100 c.c.

Don Baxter Intravenous Products Corporation
Sterile 2½% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container.
Sterile 5% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container.
Sterile 7½% Dextrode in Physiological Sodium Chloride Solution in Vacoliter Container.
Sterile 10% Dextrose in Physiological Sodium Chloride Solution in Vacoliter Container.

Eli Lilly & Co.
Solution Liver Extract Concentrated—Lilly
Ampoules Solution Liver Extract Concentrated—Lilly, 10 c.c.

G. D. Searle & Co.
Tablets Procaine Borate Without Epinephrine.

Sharp & Dohme, Inc.
Antipneumococcic Serum, Types I and II Combined—Mulford.
Antipneumococcic Serum, Concentrated (Pneumococcus Anti-body Globulin, Types I and II—Mulford.
Diphtheria Toxoid, Alum Precipitated (Refined).
Live Oak Pollen Extract—Mulford; Red Clover Pollen Extract—Mulford; Sweet Clover Pollen Extract—Mulford; Southern Ragweed Pollen Extract—Mulford.

PROPAGANDA FOR REFORM

Hemp Massager Not Acceptable.—The Council on Physical Therapy reports that the Hemp Massager, manufactured by the Conley Company, Inc., Rochester, Minn., consists of two rubber balls mounted on spindles at right angles to each other. As this device is pulled along over the body, the rubber balls pinch the skin and by friction lift it and underlying superficial tissues above the contour of the body or limbs. The Council investigated this massager and declared that it did exactly what, in practicing good massage, a masseur tries to avoid; it pinches the superficial tissues instead of picking up and kneading deep tissues as well as the superficial. Even if the massager faithfully duplicated hand massage, there are certain statements in the advertising for which critical evidence is not available. The Council objected to the claims made for the relief of headache, nervousness and constipation. In reality, these conditions might be caused by some impaired function other than that for which massage is justly indicated. The Council regards the advertising as objectionable, because satisfactory evidence is not in its possession to substantiate the efficacy of massage with this unit in the conditions mentioned. It has declared the Hemp Massager ineligible for inclusion in its list of accepted devices. (Jour. A. M. A., February 10, 1934, p. 455.)

New Books at the Library of the Medical College of Virginia.

The following new books are available to our members, the only cost being return postage:

Anthony, L. P.—A Dictionary of Dental Science.
Bassett, Clara—Mental Hygiene in the Community.
Beeston, G. N.—The Conjoint Finals.
Bennett, H., ed.—The Chemical Formulary, 1933.
Blanchan, N.—Bird Neighbors.
Brain, W. R.—Diseases of the Nervous System.
Browne, E. G.—Arabian Medicine.
Camac, C. N. B.—Imhotep to Harvey.
Clark, A. J.—Applied Pharmacology.
Cold Spring Harbor—Symposium on Quantitative Biology, Vol. 1.
Cowdry, F. V., ed.—Arteriosclerosis. A survey of the problem.
Cockayne, E. A.—Inherited Abnormalities of the Skin and its Appendages.
Economo, C. von—Encephalitis Lethargica.
Fischl, V. & others—Handbook of Chemotherapy (Part 1 only).
Gellhorn—Das Permeabilitäts Problem.
Gibson, A. G.—The Physician's Art.
Gray, J.—Ciliary Movement.
Greenlaw, E. A.—Syllabus of English Literature.
Griffith & Mitchell—Diseases of Children.
Grosser, O. V.—Anatomie u Entwicklungsgeschichte der Eihaute und d. Placenta.
Hartman, C. G., and Straus, W. L.—The Anatomy of the Rhesus Monkey.
Hillyer, J.—Reluctantly Told.
Hume, E. D.—Bedamp or Pasteur.
Jacobson—Progressive Relaxation.
Lahmeyer, F., and Dorno, C.—Eine Meleorologisch-physikalische-physiologische Studie.
Metcalf, J. C.—American Literature.
Moore, J. E.—Modern Treatment of Syphilis.
Norris & Landis—Diseases of Chest and Physical Diagnosis (5th ed.)
Prausnitz, C.—The Teaching of Preventive Medicine in Europe.
Richters, C. E.—Die Tiere im Chemischen Kriege.
Schede, F.—Hygiene des Fusses.
Stephen, K.—Psychoanalysis and Medicine.
Stempell, W.—Die Unsichbare Strahlung der Lebewesen.
Thaysen, T. E. H.—Non-Tropical Sprue.
Westermarck—History of Human Marriage (3 vols.)

Book Announcements

Procedures in Tuberculosis Control for the Dispensary, Home and Sanatorium. By BENJAMIN GOLDBERG, M. D., F. A. C. P., F. A. P. H. A., Associate Professor of Medicine, University of Illinois, etc. With a chapter on **Sanatorium Planning,** by THOMAS B. KIDNER, New York, and an Introduction by DAVID J. DAVIS, M. D., Ph. D., Dean of the College of Medicine, University of Illinois. Octavo of 373 pages. Fifty-four illustrations. Philadelphia. F. A. Davis Company. 1933. Cloth. Price, $4.00 net.

This is a volume of about three hundred and seventy-five pages with a discussion of the tuberculosis problem under three sections.

First section—Evaluation and diagnosis of the tuberculosis problem.

Second section—Home treatment.

Third section—Sanatorium treatment.

Under section one, the subject is considered from the standpoint of tuberculosis control, the dispensary, together with legislation—enabling and coercive—including regulations and the methods used in cooperation with the private physician. Enforcement should not be used when other means can be found by which the consumptive in the communicable stage can be handled. The subject is also considered from the viewpoint of the open case, or the contacts, and the means used to remove the communicable patients so they will not be a source of danger. The method of handling these cases from the dispensary, together with the supplementary activities in the homes, and the preventorium treatment for children are considered as are also education and publicity, through all the channels which can be used to convey information about tuberculosis to the laity.

Under section two, home treatment is considered from the standpoint of the dispensary, not only by getting the patients to the dispensary for examination but by visits of the doctors and nurses to the patient's home. A survey is made of home conditions, and the necessity for arranging sleeping quarters, isolation, and contact with children is discussed. As there are not enough available beds in the sanatoria to take care of the tuberculous, it is recognized that many patients must have home treatment. It is stated though that the matter of bed capacity for the tuberculous in Chicago is well taken care of.

Under section three, the function of the sanatorium is discussed, together with the routine sanatorium treatment or service, with all the departments of the sanatorium, such as details of daily routine, surgery, diet, drugs, dental department, education of patients, together with recreation, and laboratory and research work.

The book takes up the tuberculosis problem somewhat in detail, so far as case-finding and diagnosis are concerned, the handling of the patient in the dispensary, the home treatment of the patient, and the sanatorium treatment of the patient. It is brought out clearly that the greatest problem in the prevention and control of tuberculosis, so far as the people as a whole are concerned, is that which is brought about chiefly by those unfortunates whom it is difficult to isolate and, also, for whom education is most important.

The hospitalization or sanatorium treatment of the tuberculous is recommended for the most part for those people who are ignorant of the dangers of contact, the means of spread of the disease, and for those of poor economic status. The book gives somewhat in detail the mortality and morbidity rates with reference to age, race, etc., and stresses the fact that most of the cases and deaths from tuberculosis come from the congested portions of the cities. Some plans for the building of institutions are given, and the thought is presented that while we cannot expect to eradicate tuberculosis entirely there is no reason why it should not be controlled to a minimum.

It is stated that measures which are suitable for the control of the disease in Chicago may not be the ones that may be used to best advantage in another city, or in the country districts. As a whole the tuberculosis problem is considered from the viewpoint of the large city. There is information throughout the book which is of help to those interested in tuberculosis prevention and control. It can be used as a reference book by anyone who wishes information about tuberculosis and the means to be used in the control, so far as case finding, diagnosis, methods of handling, home treatment, and sanatorium treatment are concerned.

Virginia Medical Monthly

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AGNES V. EDWARDS, Richmond, *Business Manager*

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VOLUME 61 MAY, 1934 No. 2

Editorial

A New Medical Journal.

In 1800 there was only one medical journal in this country. A few years ago nearly one-half of the 1,654 medical journals published in the world were being issued on this side of the Atlantic. Many have questioned the wisdom of this enormous spread and dissipation of energy, devoutly wishing for a more concentrated output of superior material.

We have before us the first issue of a new medical publication—the *American Journal of Digestive Diseases and Nutrition.* This does not appear to be just another medical journal. For some time there have been useful special journals covering the various different though cognate fields of medical specialization—surgery, anatomy, obstetrics, dermatology and neuro-psychiatry, but in the words of the journal itself "there has not been available on the Western Hemisphere a monthly publication exclusively devoted to the printing of authoritative work in the broad fields of the digestive system and of nutrition. Contributions upon such subjects have been scattered through a score of magazines and, usually, without purpose, order or sequence. The interested investigator, clinician and general physician have found that it is a hopeless task adequately to keep familiar with so extensive and widely-dispersed a literature."

The *American Journal of Digestive Diseases and Nutrition,* under the editorship of Frank Smithies, of Chicago, and an imposing editorial council of wide geographic distribution, appears in pleasing format and with well written and timely articles of general as well as special interest. There appears to be no reason why such a journal should not succeed, and to this end we wish it well.

Quo Vadis?

For twenty-five centuries anatomy has been the *sine qua non* in medical education. There was a time when the chair of anatomy was the most prized in the universities and its incumbent dominated the medical faculty. No one can think of the anatomists of the past without a feeling of gratitude and reverence. From Galen to Vesalius to our own Oliver Wendell Holmes—Mundinus, Fallopius, Fabricius, Servetus, Eustachius, Highmore, Bidloo, Haller, Cheselden, the Hunters, the Monros—they have all ornamented medicine.

There was a time when anatomy dominated the medical course, when great attention was paid to it in every year of the curriculum, and when final examinations of students hinged largely upon it. Recently anatomy was limited to the first two of the four-year course, though it was still a stiff, respected and well-conducted subject. Again the anatomists gave ground and the course was pushed entirely into the first year. In these latter days we understand time can be found for the course

only in one semester of the first year. Anatomy indeed has fallen on evil days.

At whose feet are we to lay the blame? To the teachers of anatomy themselves? The anatomist confesses that his work is done, that the once fertile field of gross anatomy is exhausted—dissection, topography and morphology no longer offering new realms for conquest—and that the adventurer in science has had to turn to other related fields—anthropology, evolution and ethnology. If professors of anatomy have laid down the scalpel and fail to find anything of interest in human dissection are they different from the pre-Vesalians who perched on high seats lectured from the works of Galen while menial barber surgeons ignorantly dissected the subject before their students?

Perhaps the fault lies elsewhere—in our increasingly crowded curriculum, in the pressure and clamor for more and more clinical courses and an earlier practical bent in medical instruction. Before such pressure anatomy has had to retreat. Can it afford further retrenchment without the possibility of some day becoming entirely a pre-medical subject? There are those who believe that should this happen any clinical superstructure erected will rest upon a ground work of the fundamental sciences too weak to bear its load.

Too Many Doctors?

It is argued that in the United States today there are more physicians in proportion to the population than in any other country of the world. But who is willing to maintain that the proper proportion of doctors to population exists in any of the other countries and that only in our own country is the proportion wrong? Who knows what is the ideal proportion? It is argued that starvation fees and unemployment among doctors indicate a surplus of doctors. But who is willing to say that with fewer doctors and higher fees the great body of the American people who are now unable to meet doctors' bills would be any better off? Who maintains that fewer doctors means more adequate or cheaper medical service to those most in need of it? Admitting that the present distribution is bad—there is one physician to every 1,431 persons in South Carolina, one to every 621 in New York and one to every 571 in California—who will guarantee that with fewer physicians there would be any better distribution?

A New Treatment for Agranulocytosis?

A little over a year ago C. A. Doan in summarizing the various methods of treating agranulocytosis gave the mortality rates for the four most popular as: arsphenamin, 72 per cent; blood transfusion, 64 per cent; irradiation, 53 per cent, and neucleotide, 25 per cent. Recently Max Strumia (*Am. J. Med. Sci.,* April, 1934) reported favorably upon the intramuscular injection of "leukocytic cream" obtained by stratifying citrated blood in a Babcock cream bottle. It should be noted that leukocytic extract has been employed in agranulocytosis before and at least one favorable report is in the literature.

The Early Diagnosis of Coronary Disease.

When the electrocardiograph was first employed clinically it was welcomed as an exact method of diagnosis in many hitherto puzzling irregularities of the heart. We were soon told, however, that although the procedure had proved invaluable in elucidating the actual mechanism of the cardiac arrhythmias, in the long run clinical data is really sufficient in most cases for a diagnosis. The instrument then came to be looked upon by some as a toy of interest only to the cardiologist. Fortunately the idea of such limitation has been successfully dispelled by the demonstration of the increasing usefulness of the electrocardiograph in many other conditions of the heart, particularly in the early diagnosis of coronary disease. Only recently by this method Brow and Holman (*Am. Heart J.,* Dec., 1933, 9, 259), have demonstrated that the tracings obtained during an attack of angina pectoris, though transitory, are identical to those considered characteristic of coronary occlusion.

In the further study of coronary disease, in addition to the evidence to be deduced from changes in the T wave and the Q-R-S complex—reduced amplitude and the Pardee curve—our attention was called by Wolferth and Wood in 1932 to additional evidence to be found in a IVth or chest lead, and lately Katz and Kissin (*Am. Heart J.,* 1933, 8, 595), and others have emphasized the significance of alterations in the Q_3 wave. The seriousness of these latter changes has not been universally accepted, but while the cardiologists are contending over the question, those who deal with coronary disease at the bedside and in the office will do well to continue to lay stress upon the patient's story

and will make the diagnosis of acute indigestion in middle aged and elderly people rarely and with extreme caution.

Sickness Insurance in This Country.

The layman's point of view on this important question may be gathered from a recent address by John A. Kingsbury, Secretary of the Milbank Memorial Fund, before the annual convention of the Western Hospital Association and Conference with Allied Organizations meeting in Sacramento, Calif. A Senate Committee on Investigation of the High Cost of Sickness, already at work in California, speaks for the popular interest in the problem in the West.

Mr. Kingsbury, undertaking to formulate a program, states that (1) "sickness insurance should apply to all families with annual incomes of less than $3,000 or $5,000. . . . We want no poor-man's system in America." (2) "It must be grounded on a compulsory basis." (3) Provision must be made for both "mandatory" and "permissive" service. (4) "The general practitioner can be paid a sum equivalent to at least $7.50 per insured person." (5) "The basic problem is not to find more money than is now spent, but to find new and better ways of directing customary expenditures into more productive channels." (6) The funds are to be raised through taxes, contributions of the insured and employers of labor. (7) Finally, provision must be made for "lay supervision of financial and executive problems" and "professional supervision of professional personnel and professional problems."

Department of Clinical Education of the Medical Society of Virginia

Post-Graduate Clinics at University Hospital.

The regular spring post-graduate clinic of the University of Virginia Hospital is scheduled for Thursday and Friday, May 17th and 18th. This program is the thirteenth in the series which was established by the demand of physicians and has been maintained by the regular attendance of a loyal band from near and far.

Opportunity will be afforded for visiting physicians to observe the routine handling of out-patient cases by members of the newly organized Tumor Clinic. The usual round-table discussion of topics submitted by guests will be repeated at the evening meeting on Thursday. The program of clinics is as follows:

Thursday morning—Emergency Treatment of Fractures. Head and Chest—Dr. E. P. Lehman.
Spine, Pelvis and Extremities—Dr. R. V. Funsten.
Thursday afternoon—Routine Tumor Clinic in Out-Patient Department.
Thursday evening—Open Discussion.
Friday morning—Public Health Phases of Communicable Diseases—Dr. K F. Maxcy.
Treatment of Communicable Diseases—Dr. W. W. Waddell.
Management of Hay Fever—Dr. Oscar Swineford, Jr.
Friday afternoon—Problem Child Clinic—Dr. D. C. Wilson.
The Problem of the Physician and Advances in Medicine—Dr. J. C. Flippin.

Ninth Circuit of Classes in Prenatal and Postnatal Care.

Several new members and visitors attending the meetings of the five courses in prenatal and postnatal care in the northern part of the Valley of Virginia have brought to a total of forty-eight the number of physicians who have taken some part in these courses during their first three weeks. The following names are to be added to the rolls previously reported:

HARRISONBURG: Visitors—Drs. J. M. Biedler and N. M. Canter.

LURAY: New enrollments—Drs. J. E. Amiss, B. C. Shuler and J. J. Waff. Visitor—Dr. Loring Hammer.

FRONT ROYAL: Visitor—Dr. J. G. Brown.

WOODSTOCK: Visitors—Drs. A. C. Biller, F. D. Downey, D. O. Foley, R. C. Fravel.

WINCHESTER: Visitor—Dr. R. McC. Glass.

Plans for the Future.

At the close of the ninth circuit, seventeen weeks of the employment of Dr. M. E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, remain until the end of this program. The period permits the organization of a tenth circuit and additional shorter courses in the sections of northeastern Virginia which Dr. Lapham has not yet visited.

An application for one of these courses has been made by members of the Fairfax County Medical Society through Dr. A. L. Carson, Secretary, with the following advance enrollments: Drs. F. I. Bloise, A. L. Carson, W. P. Caton, R. E. Feagans, C. F. Kincheloe, William Meyer, Sigmund Newman, B. F. Phillips, E. C. Shull.

Some Statistics.

The tabulation of members and attendance for the eighth circuit of Dr. Lapham's classes on the Peninsula is given below. The figures are in many ways a repetition of previous circuits. One center of instruction proved to have been inconveniently located, and the rate of attendance there was the lowest yet recorded. There was, consequently, a slight drop in the rate for the circuit as a whole.

	Enrolled		Visitors		Attendance	
	No.	Present	No.	Present	Average	Per Cent
Richmond (Col.)	14	111	2	4	11.5	79.2
Richmond	9	48	14	60	10.8	53.3
Williamsburg	9	63	4	4	6.7	70.0
Newport News	8	65	2	6	7.1	81.2
Newport News, (Col.)	10	84	1	2	8.6	84.0
Hampton	10	76	--	--	7.6	76.0
	60	447	23	76	52.3	74.5

A summary compiled on March 23rd of the forty-five courses conducted in prenatal and postnatal care during a year and eleven months shows the following totals: Membership 554, visitors 250, fees paid $2,491. The average attendance in the classes was 10.7. The percentage of attendance for members was 76.2. The membership was divided into 319 physicians residing in the centers of instruction and 235 residing outside. Cases demonstrated before the groups numbered 291, and instructional consultations in the office of individual physicians reached a total of 551.

GEO. W. EUTSLER,
Secretary Joint Commitee,
Executive Secretary Department of Clinical Education.

Proceedings of Societies

The Fauquier County Medical Society

Met on March 6th at the home of Dr. J. Elwood Knight, in Warrenton, Va. This was a business meeting for doctors only. The president, Dr. John T. Sprague called the meeting to order at 9 P. M. After reading of minutes of the last meeting, the secretary read a large number of letters from legislators and medical societies, indicating marked sympathy with and support of the resolutions for the benefit of physicians adopted by this Society. By a unanimous vote our Society expressed its thanks and appreciation to these friends and supporters and instructed the secretary to inform each of them of this action.

The secretary then read a letter, signed by Wm. A. Smith, Administrator, Civil Works Administration of Virginia and Wm. M. Myers, State Safety Director, Civil Works Administration, proposing a plan for the physical examination of C. W. A. employees in Virginia. This was discussed at much length by a large majority of the physicians present. Special references were made to possible claims for compensation from C. W. A. employees, and the great embarrassment this might cause the government.

The main points brought out were as follows: The Army, Navy, Marine Corps and other government services give their applicants a very careful examination by an experienced examiner before they are accepted. On discharge this examination is repeated. Both examinations are permanently recorded in great detail. This is the only proper way to handle any government employees. Even with this thorough method the United States Treasury has had a very hard burden to carry. Any method less rigid than the one indicated above might prove

most disastrous to the Treasury and to the taxpayers. The C. W. A. employees should have been handled in this manner. An examination given to one of these men now, even though thorough, would not prove what his condition was on the day he was employed and could not establish what his condition will be when he is discharged at some future date. Therefore an examination given now would not protect the government and would not be just to the employee.

The C. W. A. suggested that from four to six of the examinations could be completed in an hour. This would allow from ten to fifteen minutes for each examination. Our Society felt that an examination done in so short a length of time might prove most unfair to all parties concerned and be much worse than no examination at all. An examination to protect the Government should be as rigid an examination as one to protect a life insurance company, and it would be a very serious proposition for our members to do these examinations at the wrong time and in an inefficient manner. Doctors doing these examinations may be called on for information and testimony as long as any C. W. A. employees are alive; that is for the next forty or fifty years. Some thought that it might be possible that some one had already left a Treasury door or vault open and that this might invite many unwarranted claims for many years to come and that the physicians could not at this time, by a short, inefficient examination save the Government from claims amounting to untold millions in compensation.

The C. W. A. in Washington referred to these examinations as physical appraisals; a little more than inspection. Such a procedure could be of little or no value in protecting the Government against fraudulent claims and might be very unfair to men with just claims. It appeared that this might develop into a case of the physicians "holding the bag," that it might be a pretty bad bag to hold and that it would have to be held for a lifetime.

All present felt that it might be very unjust to our fellow citizens, employees of the C. W. A., and unfair to the Government at this time to do these examinations in the manner suggested. By a unanimous vote the society decided that it would not endorse the plan of physical examinations which had been offered by the C. W. A.

It was made clear that the physicians present would gladly serve the Government or the C. W. A. employees free of charge, when such action was necessary and would work for the public good.

Following adjournment, a delicious supper was served by Dr. and Mrs. Knight.

M. B. HIDEN, *Secretary.*

The Norfolk County Medical Society

Held its annual All-Day Clinic on Wednesday, April 11th. This annual clinic has come to be very highly regarded by many of the physicians from the adjacent territory as well as by those resident in Norfolk and Portsmouth. The attendance this year was large and the program interesting and instructive. The morning session was held in St. Vincent's Hospital, then after a most appetizing luncheon served by the management of the Protestant Hospital, the afternoon session was held in that institution. Despite a severe hail storm that came on shortly after seven, the proceedings were brought to a most enjoyable close by a lecture on "The Symptoms, Diagnosis and Treatment of Cancer of the Gastro-Intestinal Tract, by Dr. J. Shelton Horsley, of Richmond.

The papers and discussions throughout the day were of deep interest; dealing not so much with unusual and infrequently met conditions, but more with every day problems confronting the average doctor, they were of high order and greatly appreciated.

A feature that meets approval is that from the inception of these clinics it has been the invariable rule to run the program strictly on scheduled time, so that no time is wasted and no speaker is permitted to encroach on another's time. With the exception of Dr. Horsley's lecture, the entire program was furnished by the following members of the Norfolk County Medical Society:

Drs. Raymond Kimbrough, Julian L. Rawls, Walter B. Martin, B. E. Harrell, Joseph D. Collins, R. L. Payne, J. Warren White, Charles W. Doughtie, L. A. McAlpine, W. P. McDowell, C. J. Andrews, C. Lydon Harrell, Lomax Gwathmey, F. C. Rinker, Foy Vann, and Stanley H. Graves.

Among the distinguished guests of the Society in recent weeks may be mentioned Dr. Wilburt Cornell Davison, of Duke University, who spoke on "Lung Abscesses and Brucella Infection"; Dr. Clifford B. Lull, Chief of Clinic at Philadelphia

Lying-in Hospital, who furnished a most interesting account of "Obstetrics as seen by the Motion Picture Camera"; and Dr. Guy Le Roy Hunner, of Baltimore, who discussed "Certain Symptoms of Urinary Tract Origin which are often Diagnosed and Treated as of other Genesis."

While the great majority of the papers presented at the weekly meetings are from members of the Society, occasional visits from men of prominence in other fields are interesting and instructive.

L. B. SCOTT, *Secretary.*

The Northampton County Medical Society

Met at the Eastville Inn, on March 4th, for its quarterly dinner and scientific session. Dr. W. T. Green and Dr. W. C. Henderson, both of Nassawadox, are president and secretary, respectively.

Mr. A. A. Shank, director of the Nassawadox Branch of the State Laboratory, reported on some original research on Typhoid. By making cultures and counts of organisms in varying amounts of blood he was able to predict with great accuracy on the progress of the disease.

The Physicians' Journal Club

Held a reorganization meeting at the Northampton-Accomack Memorial Hospital, Nassawadox, Va., March 20, 1934. Dr. H. L. Denoon of that place reported on eleven cases of Ectopic Pregnancy taken from the files of the hospital. Dr. J. R. Hamilton, also of Nassawadox, presented an abstract on Circulatory Failure taken from Warfield's article in the February, 1934, *Archives of Internal Medicine.*

Dr. S. K. Ames, of Cape Charles, is president of this organization which meets monthly, and is composed of the physicians in the counties of Accomack and Northampton. Dr. W. Carey Henderson, of Nassawadox, is secretary.

News Notes

Reappointed on State Board of Medical Examiners.

Governor Peery has reappointed the following, nominated by the Medical Society of Virginia, as members of the State Board of Medical Examiners for a term of four years, expiring April 1, 1938:

Dr. R. D. Bates, Newtown.
Dr. P. St. L. Moncure, Norfolk.
Dr. H. U. Stephenson, Richmond.
Dr. Fletcher J. Wright, Petersburg.
Dr. I. C. Harrison, Danville.
Dr. J. W. Preston, Roanoke.
Dr. P. W. Boyd, Winchester.
Dr. Lewis Holladay, Orange.
Dr. F. H. Smith, Abingdon.

The Virginia Society of Oto-Laryngology and Ophthalmology

Will hold its annual meeting in Lynchburg, on May 5th, with the president, Dr. H. Grant Preston, of Harrisonburg, presiding.

The invited guest speakers will be Dr. S. J. Crowe, Baltimore, and Dr. John H. Dunnington, New York. Others on the program are Dr. Karl S. Blackwell, Richmond; Dr. E. G. Gill, Roanoke; Dr. C. A. Young, Roanoke; Dr. Cuthbert Tunstall, Charlottesville; Dr. R. H. Courtney, Richmond; Dr. H. S Hedges, Charlottesville; and Dr M. H. Hood, Portsmouth.

Dr. Edwin W. Burton, Charlottesville, is secretory of this Society.

National Fraternity for Medical Women.

The biennial convention of Alpha Epsilon Iota, National Fraternity for Medical Women, will be held at the Academy of Medicine Building, Richmond, Va., May 31st to June 2nd, inclusive, with Pi Chapter of the Medical College of Virginia as hostess.

This organization owes its inception to three senior and two junior women medical students at the University of Michigan, Ann Arbor, and was founded in 1890. Since that time its membership has increased to approximately 1,700, with chapters in most of the Class A Medical Schools which admit women. In addition to the University of Michigan, there are chapters at Rush (Chicago), the Universities of Cincinnati, Illinois, Minnesota, Leland Stanford, Cornell, Women's Medical of Philadelphia, Universities of California, Southern California, Syracuse, Tulane, Oklahoma, Oregon, Kansas, Texas, Ohio State, Wisconsin, Baylor (Texas), George Washington (Washington, D. C), Washing-

ton University of Missouri, and the Medical College of Virginia.

The local Chapter was formed in 1923 and still numbers among its members four out of the five applicants for the Charter, Drs. Mary B. Baughman, Lucy Scott Hill, Rachel Fletcther Weems, and Leta J. White. The highest honor which the Fraternity has to bestow was accorded Dr. Pauline Williams, who was National President, 1929-32 and who is at present Grand Council Chairman. Drs. Louise Fry Galvin and Mary Elizabeth Johnston have been Grand Chapter Secretaries.

The Committee in charge of local arrangements is as follows:

Dr. Mary B. Baughman, President Pi, General Chairman.
Miss Mildred Foreman, Vice-President, Entertainment.
Dr. Mary Elizabeth Johnston, Secretary-Treasurer Pi, Credentials.
Miss Esta Levy, Recording Secretary, Delegates.
Dr. Pauline Williams, Permanent Archivist, Housing.
Dr. Regena Cook Beck, Publicity.
Miss Dorothy Clark, Transportation.
Miss Aurelia Gill, Sight Seeing.
Dr. Louise Fry Galvin, Meals.
Miss Frances Noblin, Program.

In addition to the Executive Board Sessions on Thursday, and the General Sessions on Thursday night, and Friday and Saturday, with the usual breakfasts, luncheons, and dinners, there will be sight-seeing trips in and around Richmond and neighboring places, culminating in a trip to Williamsburg on Saturday afternoon.

About fifty delegates are expected.

Married.

Dr. James Asa Shield and Miss Frances Richardson, both of Richmond, Va., April 14th.

Dr. Herman Stuart Fletcher and Miss Helen Louise Overmann, both of Richmond, Va., April 4th.

Dr. Fred T. Hauser, class of '33, Medical College of Virginia, recently interning at Memorial Hospital, Richmond, and Miss Juanita Shannon, of the Training School at Memorial Hospital, February 22nd. They have located at Bland, Va., where Dr. Hauser is engaged in general practice.

Dr. Frederick Pilcher, Jr., Rochester, Minn., class of '29, University of Virginia, Department of Medicine, and Miss Marjorie McGuire, Petersburg, Va., March 24th.

Dr. Wyatt Earle Roye, class of '31, Medical College of Virginia, and Miss Anne Estelle Taylor, Bowler's Wharf, Va., March 22nd. They will make their home in Burkeville, Va.

Dr. Allen W. Lane, class of '32, Medical College of Virginia, and Miss Frances Barrow, Blackstone, Va., April 7th. They will make their home in Blackstone, where Dr. Lane is medical director of the Blackstone Transient Camp.

American Medical Association.

The eighty-fifth annual session of the Association will be held in Cleveland, Ohio, June 11th to 15th. The House of Delegates will convene on Monday, the 11th, and the Scientic Assembly will open with the general meeting on Tuesday evening, the 12th, at 8:30 P. M. Dr. Dean Lewis, Baltimore, is president. The Statler is to be headquarters hotel. A large attendance is expected and the meeting promises to be excellent in every detail.

American Medical Golfers to Play in Cleveland.

The American Medical Golfing Association will hold its twentieth annual tournament at the Mayfield Couutry Club in Cleveland on Monday, June 11th. Thirty-six holes of golf will be played in competition for the fifty trophies and prizes in the eight events.

The Association was organized in 1915 and now totals 1,100 members, representing every state in the union. All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write the executive secretary, Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. Participants in the tournament are required to furnish their home club handicap, signed by the secretary. No handicap over 25 is allowed, except in the Kickers'. No trophy is awarded a Fellow who is absent from the annual dinner.

Return from South America.

Dr. Joseph A. White and Dr. and Mrs. Emory Hill, Richmond, Va., returned home about the middle of April, after a cruise to West Indies and South America, while attending the fifth congress of the Pan American Medical Association. This was a Floating Congress, under the presidency of Dr. John O. McReynolds, of Dallas, Texas. Both Drs. White and Hill gave talks and discussed a number of papers in the section in which they were

especially interested. They report a pleasant vacation and pleasure in meeting with several graduates from Virginia schools, now located in foreign countries.

Dr. George H. Long,

Luray, Va., has accepted an appointment on Page County Health Board, succeeding Dr. Virgil Hammer, who resigned recently after having served for more than a score of years.

Dr. Dudley C. Ashton,

Who has been practicing in Richmond, Va., for the past six years, has moved to Beckley, W. Va., where he is associated with the Beckley Hospital.

American College of Physicians.

At the annual meeting of the American College of Physicians held in Chicago the middle of April, Dr. J. C. Meakens, Montreal, Canada, succeeded to the presidency, and Dr. James Alexander Miller, New York, was named president-elect.

West Virginia State Medical Association.

The annual meeting of this Association will be held in Huntington, W. Va., May 14th-16th, under the presidency of Dr. Roy Ben Miller, Parkersburg, and the program will be up to its usual high standard. Mr. Joe W. Savage, Charleston, is executive secretary of the Association.

Dr. Frederick L. Finch,

Class of '32, Medical College of Virginia, has located at Urbanna, Va., for the general practice of medicine.

Virginia Tuberculosis Association.

Representatives of thirty-two county and twelve city tuberculosis organizations attended the annual meeting of the Virginia Tuberculosis Association, held at Richmond on April 5th.

"Tuberculosis in Children" was discussed by Dr. Frank B. Stafford, of Blue Ridge Sanatorium, and Dr. Franklin D. Wilson, of Norfolk, following which Mrs. Rufus Parks, President of the Princess Anne County Tuberculosis Association, Miss Elsie E. Dyer, Executive Secretary of the Roanoke Tuberculosis Association and Miss Margaret S. Vaughan, Public Health Nurse of James City County, described tuberculin and X-ray work done by local physicians and sponsored by their respective tuberculosis organizations.

"Tuberculosis in the Negro" was the subject of addresses by Dr. C. Howard Marcy, of Pittsburgh, and Dr. Charles W. Scott, of Hampton. Dr. Scott was formerly Tuberculosis Clinician for the State Department of Health.

Dr. Marcy, who is President of the Pennsylvania Tuberculosis Society and Medical Director of the Tuberculosis League of Pittsburgh, is also Assistant Professor of Medicine at the University of Pittsburgh, and a member of the special committee appointed by the National Tuberculosis Association to study tuberculosis in the Negro.

It was pointed out that while the Negro is particularly susceptible to tuberculosis, as the bacillus spreads more rapidly and causes a more acute form of the disease in this race, sociological factors are of even greater significance in studying tuberculosis in this group. Poor housing, overcrowding, lack of segregation, poor sanitation and unbalanced diet were found by a recent survey in Pittsburgh to play an important part in making the death rate from tuberculosis from four to five times as great in the Negro as in the white race. The importance of better training for colored doctors and the employment of colored nurses was stressed, because they could reach their people in a way white doctors and nurses cannot do. In mentioning advantages of a tuberculosis survey, it was stated that 515 cases of tuberculosis were found in Pittsburgh where only 100 had been previously known. It was stated that tuberculin testing is an invaluable aid to the physician, but futile unless the open case of tuberculosis is cared for.

Dr. Thomas Hunnicutt

Has located in Medical Arts Building, Newport News, Va., and is engaged in the general practice of medicine. He was graduated from the Medical College of Virginia in 1929, following which he interned at Memorial Hospital, Richmond. Later, he had a residency at the Boston City Hospital and was a member of the medical staff of the Boston Dispensary from 1931 to 1933.

Dr. A. Wells Lowman,

Located for several years at Stonega, Va., recently moved to Denmark, S. C.

Dr. Frederick P. Fletcher

Was elected president of the East End Business Men's Association of Richmond, Va., at its annual meeting held in April.

Dr. Charles A. Young,

Roanoke, Va., leaves on May the 11th to take the Interstate Post-Graduate course again this year. The doctors will attend clinics in Spain, Italy, Switzerland and Germany. Dr. Young expects to be back in his office on July 5th.

Dr. H. G. Byrd,

Class of '32, Medical College of Virginia, has located at Louisa, Va., where he is engaged in general practice.

News from University of Virginia, Department of Medicine.

At the meeting of the University of Virginia Medical Society on March 26th, Dr. Dean Lewis, Professor of Surgery at the Johns Hopkins Medical School, spoke on the subject of The Hypophysis, Relation of Clinical Syndromes to Cellular Changes; at the meeting on April 9th, Dr. Alexander Randall, Professor of Urology at the University of Pennsylvania, spoke on The Obstructive Uropathies; on April 16th, Dr. A. R. Shands, Jr., Professor of Orthopedic Surgery at Duke University, spoke on Studies in Bone Formation, with Special Reference to the Use of Calcium Salts.

On March 29th, Dr. H. B. Mulholland spoke before the Bath-Alleghany County Medical Society on Newer Treatment of Diabetes Mellitus.

Dr. George Y. Dunlop, of the Department of Surgery, Cornell University, visited the Medical School on April 7th.

On the night of April 12th, following the annual initiation ceremony of the Alpha of Virginia Chapter of Alpha Omega Alpha, Dr. Edwards A. Park, Professor of Pediatrics at Johns Hopkins University, gave an address on the subject of Clinical Manifestations of Vitamin C Deficiency.

Medical College of Virginia News Notes.

The commencement exercises of the Medical College of Virginia will be held on the night of May 29th at eight o'clock in the auditorium of the Mosque at which time the address will be made by Dr. Francis Pendleton Gaines, President, Washington and Lee University.

The commencement sermon will be preached by Dr. Churchill J. Gibson, Rector, Saint James Episcopal Church, on Sunday, May 27th.

It is expected there will be about one hundred and eighty-seven graduates from the four schools, medicine, dentistry, pharmacy and nursing.

Dr. Frank L. Apperly, Dr. H. B. Haag, and Dr. R. J. Main attended the annual meeting of the associations of biological chemists, experimental pathologists, physiologists, and pharmacologists in New York, March 29th-31st.

Dr. E. H. Ingersoll and Mr. T. W. Andersen attended the annual meeting of the American Association of Anatomists in Philadelphia the latter part of March.

Recent visitors to the college were Dr. Seth Gayle, '27, of Scottfield, Ill.; Dr. C. B. Bowyer, '06, Stonega, Va.; Dr. C. V. Hollowell, '28, and Dr. E. V. Tucker, '30, of Goldsboro, N. C; Mr. A. W. Armour, of the General Education Board, New York, and Dr. Blanton P. Seward, '22, Roanoke, Va.

The regular meeting of the faculty and staff was held Thursday, April 12th. The following program was presented:

Chemical Burn of the Cornea in the New Born, by Dr. S. Trattner.

Urinary Studies in Arthritis and Other Conditions, by Dr. J. C. Forbes and Mr. R. C. Neale.

The monthly report for the outpatient department shows 5,626 visits for the month of March.

Dr. Alfred R. Shands, Jr., professor of orthopedic surgery at Duke University lectured to the upper classmen recently.

News Notes from the Duke University School of Medicine and Duke Hospital.

On April 6th, Dr. W. S. Rankin, Director of the Hospital Division of the Duke Endowment, lectured in the hospital amphitheatre on The State and the Practice of Medicine.

On April 16th, Mr. Vilhjalmur Stefanssom, explorer, lecturer, and author, gave a lecture on Arctic Dietetics.

On April 17th, Dr. Adolph H. Schultz, Associate Professor of Physical Anthropology at The Johns Hopkins University School of Medicine, addressed the Duke Chapter of Sigma Xi on the subject of Man as a Primate.

During the winter quarter the following seniors were elected to Alpha Omega Alpha fraternity: Earl W. Brian, Richard Z. Query, Jr., and Charles T. Wood.

Dr. W. H. Hale,

Who for the past three years has been operating a clinic in Bland, Va., has recently located in the Shumate Building, Pearisburg, Va., where he formerly practiced.

Dr. C. W. Trexler,

Class of '26, University of Virginia, Department of Medicine, for the past two years associated with the Mid-Pacific Clinic at Honolulu, Hawaii, opened offices on March 15th in 65 Alexander Young Building, that city. He took over the office and equipment of the late Dr. R. H. Hagood, and will limit his practice to diseases of the eye, ear, nose and throat.

The American Association for the Study of Goiter

Will hold its annual meeting in Cleveland, Ohio, June 7th-9th, under the presidency of Dr. R. M. Howard, of Oklahoma City, Okla. This meeting just precedes that of the American Medical Association and the program includes the names of a number of well-known men in the United States and Canada interested in the subject of goiter. For further information, write Dr. J. R. Yung, corresponding secretary, Terre Haute, Ind.

Dr. W. Ambrose McGee,

Richmond, Va., has been elected president of the Alpha Alumni Chapter of the Pi Kappa Alpha national fraternity, recently re-organized in this city.

Dr. H. Cowles Rucker,

Mattaox, Va., was elected president of the Amelia Golf Club, at its annual meeting held in April. The Amelia Club is one of the charter members of the Southside Virginia Amateur Golf Association, composed of ten clubs.

Dr. M. F. Brock,

Who graduated from the Medical College of Virginia in 1930, is now superintendent of the Norfolk, Va., Welfare Center and physician-in-charge of the Grandy Sanatorium, a unit of the Center. Dr. Brock interned at St. Vincent's Hospital, Norfolk.

Southeastern Surgical Congress.

Dr. Gerry R. Holden, Jacksonville, Fla., succeeded to the presidency of this association at its annual meeting held in Nashville, Tenn., recently. At this time, Dr. Wiliam D. Haggard, of Nashville was chosen president-elect. Dr. B. T. Beasley, Atlanta, Ga., was re-elected secretary. It was voted to hold the 1935 session in Jacksonville, Fla.

Dr. Paul L. Dent,

Of the class of '31, Medical College of Virginia, announces that he has opened offices at Point Pleasant, W. Va., where he will be engaged in general practice.

Dr. Henry E. Davis,

Williamsburg, Va., has been appointed a member of the School Board of that city, to fill the vacancy caused by the resignation of Dr. W. L. L. Smoot.

Dr. James W. Reed

Has been elected a member of the City Council of Norfolk, Va., to fill the unexpired term of Mr. S. L. Slover, resigned. With the exception of a three-year term as health officer of Norfolk County this is Dr. Reed's first experience in public office. He has, however, been quite active in all efforts for the advancement of the Ocean View section, whose interests he will especially represent.

Dr. M. B. Payne,

Class of '29, University of Virginia, Department of Medicine, for several years of St. Charles, Va., has recently accepted a position as physician and surgeon for the Blue Diamond Coal Company, and is now located at Blue Diamond, Ky.

Dr. Charles F. Kincheloe

Is located at East Falls Church, Va., where he is engaged in general practice. He is a graduate of the University of Virginia, class of '31, and served internships at Charity Hospital, New Orleans, La., and St. Luke's Hospital, Bethlehem, Pa., before locating for private work.

The Bulletin of the American Society for the Control of Cancer

Contains short, practical, articles written by distinguished authorities in the field of cancer therapy

and cancer research. A complimentary copy of the *Bulletin* will be gladly sent to any physician requesting it from the American Society for the Control of Cancer, 1250 Sixth Avenue, New York City. It offers, at the subscription price of only $1.00 a year, an easy and practical way for the physician to keep abreast of cancer control progress, and contains much educational matter that is interesting not only to the medical profession but to the laymen.

Venereal Disease Information.

For a number of years the U. S. Public Health Service has been publishing, for the information of physicians, health officers, and others, a monthly abstract journal known as *"Veneral Disease Information."* This publication contains usually one original article on a subject of general interest in connection with the venereal diseases and numerous abstracts from the current literature pertaining to these diseases. In the preparation of this abstract journal more than 350 of the leading medical journals of the world are reviewed and abstracts made of the articles on this subject.

The cost of *"Veneral Disease Information"* is only fifty cents per annum, payable in advance to the Superintendent of Documents, Goverment Printing Office, Washington, D. C. It is desired to remind the reader that this nominal charge represents only a very small portion of the total expense of preparation, the journal being a contribution of the Public Health Service in its program with State and local health departments directed against the venereal diseases.

Obituary Record

Dr. Albert Asa Cannaday,

Roanoke, Va., died February 22nd, of Ludwig's angina. He was born in 1863 and graduated from the New York University Medical College in 1888. Dr. Cannaday has been a member of the Medical Society of Virginia for a number of years.

Dr. Calvin Hawthorne Childress,

Lieutenant-Commander and medical officer in the Naval Reserve Fleet Division Five, stationed at Norfolk, Va., died suddenly April 1st, following a heart attack. He was on board ship, returning from a visit to New York, and was found dead by a friend who went to meet him. Dr. Childress was a native of Richmond, Va., and was 43 years of age. He graduated from the Medical College of Virginia in 1915. Dr. Childress had been a member of the Medical Society of Virginia for some years. His wife and three children survive him.

Dr. James T. Jarrett,

Roanoke, Va., died April 1st. He was 63 years of age and a graduate of the former University College of Medicine, Richmond, Va., in 1898. His wife and three children survive him.

Dr. Charles Lee Quaintance,

Died April 13th in New York City. He was formerly a resident of Charlottesville, Va., but had been located for practice at Queen's Village, Long Island, in recent years. Dr. Quaintance was 39 years of age and graduated from the University of Virginia, Department of Medicine, in 1921. His wife and two children survive him.

Dr. Hanson Slaven Ogilvie,

Asheville, N. C., died March 22nd. He was 50 years of age and graduated from the Medical College of Virginia, class of '09. Dr. Ogilvie specialized in psychiatry and was located in New York before going to Asheville.

Dr. George Norfleet Harrell,

Grimesland, N. C., died February 16th. He was 52 years of age and a graduate of the former University College of Medicine, Richmond, Va., in 1907.

Dr. James Dallas Kirk,

Roanoke, Va., died December 22, 1933, of pneumonia. He was 87 years years of age and graduated from the Long Island College Hospital, Brooklyn, in 1870.

Dr. Elijah Emery Rose,

Ewing, Va., died December 27, 1933. He was 80 years of age.

Mr. E. Mead Johnson.

It is with regret we announce the death on March the 20th, of Mr. E. Mead Johnson, president of Mead Johnson and Company of Evansville, Ind.

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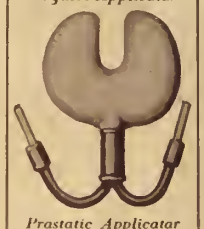
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Frederick C. Holden, M. D., and Francis W. Sovak, M. D., Am. Jrl. Obs. & Gyn. Vol. XXIV, No. 5, p. 684, November, 1932.
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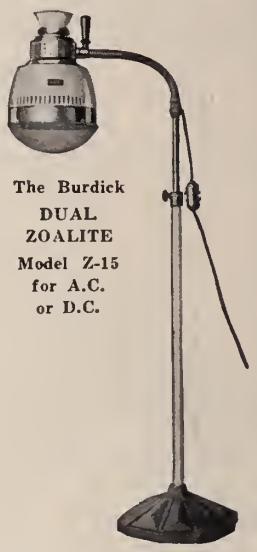
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THE PITUITARY HORMONES. A REVIEW.*

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Smallest of our ductless glands, but with the greatest number of known functions, the pituitary, ensconced in its osseous throne room, reigns supreme among the endocrines. It has not been for long, however, that the student has been burdened with the task of learning its various functions, for until the present century, our texts have culminated the brief morphological description of this "embryonic relic" with the disheartening remark, "Nothing is known concerning its functions." In 1886, however, Marie[1] had demonstrated the presence of pathological changes in the pituitary gland in cases of acromegaly, although Minkowski was probably the first to recognize that this relationship was causative, and in 1895 the pressor effect of the gland was first determined. From then on, it was not long before the posterior portion of the hypophysis readily yielded its secrets, but the anterior portion was much more reticent, and for years investigators wandered through a dense fog of poorly controlled experiments and misinterpreted data. Not until this past decade was the correct path finally apparent, and progress became more and more rapid, until the goal is now coming into view.

Our present knowledge of the pituitary functions may be briefly summarized as follows:

A. THE POSTERIOR PITUITARY.

The pressor activity of whole pituitary extracts was discovered by Oliver and Schaefer[2] in 1895. Howell[3] in 1898 proved that this effect was confined to the posterior lobe, and Dale[4] in 1906, showed the existence of the oxytocic principle, first used in obstetrics by Bell[5] in 1909. These two substances were finally separated by Kamm.[6] The effect of the vasopressor hormone on urine secretion was reported in 1906,[7] and its use in diabetes insipidus in 1913.[8]

It must be noted, however, that discussion is still rampant as to whether the posterior pituitary actually secretes these hormones, or merely serves as a storehouse for them, as actually secreted by the intermediate lobe of the hypophysis.

These two substances, the vasopressor and oxytocic hormones, both of which activate smooth muscle, have been available to the medical profession for years, in the treatment of post-partum hemorrhage, gas distention of the intestines, diabetes insipidus, and circulatory shock. Some proprietary preparations of the posterior lobe are: *Pituitrin* (oxytocin and vasopressin), *Pitocin* (oxytocin), and *Pitressin* (vasopressin) (Parke, Davis).

B. THE ANTERIOR PITUITARY.

(1) The Growth Hormone.

Following Marie's work on acromegaly, Massalongo[9] in 1892 suggested that acromegaly is merely a gigantism occurring after closure of the epiphyses, with an overactive deposition of osseous tissue by the periosteal membrane. In 1910, Aschner[10] proved that hypophysectomized puppies remained dwarfed as well as sexually infantile; which results made it appear that Marie's acrogmegaly must represent a condition of hyperpituitarism, and that the pituitary was a most potent factor in regulating growth. The next logical step was performed by H. Evans and Long in 1921,[11] who, after obtaining the usual negative results with feeding experiments, were able to markedly increase the growth rate of rats by the injection of a crude pituitary extract. This was later obtained in a more purified form[12, 13]. Some favorable clinical results with this growth hormone have been reported.[14] Available proprietary prepa-

*Read in part before the Stuart Circle Clinical Club, March 14, 1934.

rations containing this growth hormone include *Phyone* (Wilson), and *Antuitrin G* (Parke, Davis).

(2) The Gonadotropic Hormone.

It has been recognized for some time that hypopituitarism, both clinical and experimental, was associated with hypoplasia of the reproductive glands and suppression of the secondary sex characteristics. Hypertrophy of the anterior lobe during pregnancy was reported in 1898[15] and in eunuchs in 1908.[16] Crowe et al[17] in 1910 linked pituitary disturbances with adiposity and sexual infantilism. Cushing and Goetsch[18] then showed that it was probably the anterior lobe which was responsible for the sex-stimulating effect, but prior to 1921, the effects of feeding the gland on the gonads of experimental animals were variable and generally negative. H. Evans and Long[19] finally succeeded in producing hypertrophy of the ovaries by the injection of an alkaline extract of the anterior lobe. This procedure opened the way for a great deal of work in the succeeding years, and in 1927, Smith and Engel,[20] and Zondek and Aschheim,[21] simultaneously discovered that implants of the anterior lobe into immature rats and mice caused ovulation and formation of corpora lutea. Smith likewise found that ovarian atrophy following hypophysectomy was repaired by pituitary implants. In 1931, Fevold et al,[22] and later Z. Wallen Lawrence,[23] showed that the anterior hypophysis secretes two fractions: one which stimulates ovarian follicular growth; the other producing luteinization. The knowledge simultaneously gained during this time, concerning the ovarian and corpus luteum hormones, finally enabled us to postulate the present theory of menstruation, based upon a rhythmical activity of the anterior lobe of the pituitary, first stimulating production of the follicular hormone (estrin), then ovulation, and finally production of the corpus luteum hormone (progestin). Lower[24] believes that this gonadotropic hormone may be concerned in the enlargement of the prostate.

This gonad-stimulating hormone is not yet available clinically, although we do have a substance which resembles it to some extent, but which is probably formed by the placenta: *placental prolan.* This hormone is execreted in the urine during pregnancy so long as viable placental tissue is in contact with the maternal circulation,[25] and is responsible for the rat and rabbit ovulation tests for pregnancy. That this urinary prolan of pregnancy is not identical with the gonadotropic hormone of the pituitary has been proven by Leonard.[26] Placental prolan, extracted from the urine of gravid women, is obtainable commercially as *Antuitrin S* (Parke, Davis), and *Follutein* (Squibb). Some favorable reports have been made concerning the use of this substance in the treatment of infantile uterus, dysmenorrhea, aspermia, and genital hypoplasia in the male[27, 28, 29]. Prolan is standardized in rat units; one unit being that amount necessary to produce ovulation in an immature female rat, when injected subcutaneously.

(3) The thyreotropic hormone.

As early as 1889, Rogowitsch[30] reported a hypertrophy of the pituitary following thyroidectomy of the rabbit, but nothing further of importance concerning the thyro-pituitary relationship was obtained until recently when Loeb[31] noticed that an anterior pituitary extract caused hypertrophy of the thyroid, and the work of Adler, Allen, and Spaul,[32] showed that amphibian metamorphosis could be produced by anterior lobe extracts as well as thyroxin. This suggested the presence of a thyroid stimulating factor of the hypophysis, especially since Smith proved that thyroid atrophy following hypophysectomy could be prevented by anterior lobe transplants. This thyreotropic hormone has now been obtained quite free of other known pituitary hormones[33, 34, 35] and is capable of producing a histological picture quite typical of that obtained in exopthalmic goiter. It is quite probable that further investigation in this field will do much to remove our present ignorance of the etiology of hyperthyroidism. It is also to be hoped that eventually an inhibiting factor for the thyroid, or for the thyreotropic hormone, will be discovered, so that instead of our present unphysiological treatment of hyperthyroidism, surgical excision, we will be able to regulate the function of this gland at will. In fact, this inhibiting substance may already have been obtained.[36]

(4) The lactogenic hormone.

Early work indicated that the pituitary contained a galactagogue[37] but these results were undoubtedly due to the stimulating effect of the posterior lobe on the smooth muscle of the gland, producing merely a temporary increase in milk flow.[38] In 1928, Stricker and Grueter[39] induced lactation in female rabbits, previously subjected to sterile copulation,

by the injection of an aqueous extract of the anterior lobe. In 1930, Corner[40] produced lactation in castrated virgin female rabbits by means of a hypophyseal extract. Later Riddle repeated these results with a fairly pure extract in the castrated male rabbit, following injections of the female sex hormone and progestin to produce breast development, and Collip[41] was able to inhibit lactation in the rat by hypophysectomy. E. I. Evans[42] succeeded in initiating lactation for nine months, in virgin and dry goats, by the subcutaneous injection of an alkaline extract of the anterior pituitary for six successive days. This would suggest that lactation is a trigger mechanism; once started by the secretion, or injection, of the lactogenic hormone, it proceeds for a definite interval, under the nervous stimulation of suckling or milking. These results have been practically duplicated in cows and bitches. The administration of this hormone to a lactating cow may easily raise the milk production to a level 50 per cent higher than previously, but only upon continued administration.

It now appears that the stimulus causing the anterior pituitary to secrete this lactogenic hormone, is a sudden diminution in the amount of female sex hormone in the body, as normally produced by removal of the placenta at parturition.[43] When the placenta is retained and continues secreting the female sex hormone, lactation is usually inhibited.[25, 44] Our ideas concerning the physiology of lactation have been somewhat disturbed by the recent discovery that distention of the uterus, as by paraffin, inhibits lactation in rats,[45] presumably by a nervous reflex. This factor may be concerned in the failure of patients with paraplegia to lactate following delivery.[46] The clinical application of one type of anterior lobe extract has had favorable results.[47] There is certainly no evidence that various proprietary galactagogues such as dried mammary substance, have any value. This hormone may be obtained in the form of *Prolactin* (Squibb), according to the method of Riddle and Bates. It is standardized by its ability to increase the weight of the crop gland of immature pigeons, and its potency is expressed in bird units.

(5) The diabetogenic hormone.

Ever since the discovery of insulin, the medical profession has been laboring under the delusion that it understood the etiology of diabetes mellitus. Due to more recent investigations, however, we now have a better insight into our condition. Borchardt[48] had reported as early as 1908 that the injection of pituitary extracts produced glycosuria in rabbits, but definite proof that the pituitary plays an important part in carbohydrate metabolism was not available until Houssay reported that hypophysectomy markedly alleviated the diabetes resulting from complete pancreatectomy, and prolonged the life of the animals. The hormone responsible for this effect was not isolated in a potent form, however, until 1932. Then, as often happens, this discovery was made simultaneously and independently in three laboratories, by Houssay,[49] E. I. Evans,[50] and Barnes,[51] but with priority in publication accorded to Houssay. These three investigators found that injections of anterior lobe extracts into normal animals produced symptoms of diabetes, and at the present time we know that a severe and typical diabetic syndrome may be produced in this way, which ceases when the injections are discontinued. In fact, this diabetogenic hormone will produce more marked symptoms of diabetes in a normal animal than will complete pancreatectomy. Apparently this pituitary hormone inhibits the metabolism of glucose, perhaps by direct action on the tissues, and may thus function as a brake on the action of insulin. In the absence of insulin, as in a complete diabetic, the unantagonized action of this diabetogenic hormone makes sugar metabolism practically impossible. If the anterior pituitary be removed, this inhibiting factor is then absent, and carbohydrate metabolism proceeds by some mechanism other than pancreatic insulin. These new findings undoubtedly explain the glycosuria or lowered glucose tolerance frequently accompanying certain pituitary dysfunctions, as acromegaly.

Furthermore, removal of most of the adrenal tissue alleviates the diabetes resulting from pancreatectomy,[52] and injection of the diabetogenic hormone into an adrenalectomized animal does not produce the characteristic hyperglycaemia.[53] This indicates that this carbohydrate hormone of the anterior hypophysis may produce its effects via the cortical hormone of the adrenals.

(6) The adrenotropic hormone.

Collip et al[54] report that the adrenal atrophy following hypophysectomy may be prevented by the

injection of an anterior pituitary extract, indicating the existence of a specific adrenotropic hormone.

Extracts of the entire anterior lobe are available such as *Anterior-lobe Pituitary Extract* (Mulford) and *Antuitrin* (Parke, Davis), but since these are apparently not subjected to any bio-assays for the various pituitary hormones, their value is problematical. Certainly the therapeutic value of the desiccated pituitary extracts by mouth is extremely doubtful. Witness the statement of the Council on Pharmacy and Chemistry of the American Medical Association that "The Council holds that extensive clinical trial has failed to establish the value of desiccated pituitary preparations for oral administration."[55] It is now incumbent for the manufactors of the various pituitary hormones to prove that their preparations, besides being active, do not contain the diabetogenic hormone. Otherwise, one may well hesitate to use the preparations for fear of producing serious disturbance in carbohydrate metabolism.

The recognition of the various hormones of the pituitary gland has enabled us to analyze the many concomitant symptoms of various pituitary dysfunctions. For example, we may now postulate that an overgrowth of the pituitary cells producing the growth hormone will so markedly increase the secretion of this substance as to produce acromegaly or gigantism, yet at the same time, perhaps by pressure, interfere with this function of those cells producing the gonadotropic, thyreotropic, and diabetogenic hormones, thus causing those sexual and metabolic disturbances seen in acromegaly. It is indeed difficult to understand from what types of cells of the anterior pituitary these various hormones come, for at the present time only three cell types are recognized: eosinophilic, basophilic, and chromophobic. Possibly one kind of cell produces several hormones.

The whole secret of the anterior pituitary is certainly not yet elucidated, and it seems probable that other hormones will eventually be isolated.

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A RESUME OF FIVE HUNDRED CONSECUTIVE PITUITARY CASES OCCURRING IN GENERAL NEUROLOGICAL PRACTICE.*

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Here are presented five hundred consecutive cases of pituitary disorder taken from our private office files for the last twelve years. Doubtful cases and those in which some other diagnosis overshadowed that of pituitary disturbance were not included. X-ray evidence of a small, large, deformed or bridged sella was confirmatory of the diagnosis of pituitary disturbance in 421 or 95 per cent of the 442 or 88.4 per cent cases radiographed by Dr. D. D. Talley. In the twenty-one negative cases it was assumed that atrophic, strumous or other morphological changes had taken place in the pituitary cells and had not produced demonstrable bone structure changes.

Previous to twenty-five years ago, practically nothing was known of pituitary disorders except that Dercum had described adiposis dolorosa and others had contributed to our knowledge of acromegaly. In 1913 Cushing published his epoch-making book.

The sella turcica has been shown in the average adult, when the tube is thirty inches from the film, to be about 11 mm. in its horizontal (anterior-posterior) diameter, 8 mm. in its vertical diameter and that the outlet between the tips of the anterior and posterior clinoids should be from 3 to 5 mm. It has been shown that the square area of the sella in the sagittal plane is usually about one three-hundredths of the area of the skull in the same plane. The size and shape of the sella vary somewhat as to age, race and shape of the skull. The gland contained in the sella consists of two small lobes and of an infundibulum which is of the same histological structure as the posterior lobe. The secretions of the anterior lobe and of the posterior lobe together with the infundibulum, are different and distinct in function. In gross, that of the anterior lobe has to do with skeletal and sexual development, while that of the posterior lobe has to do with involuntary muscle stability and body metalobism, especially fat. Pathologically, the gland may be affected by hypertrophy, atrophy, vascular congestion, fibrous change, tumor, cystic formation or by inflammation. Clinically, physiologic or disease disturbance of the gland may account for, or largely account for, such varied conditions as Frolich's adiposis dystrophia genitalis, other adiposities, the form and shape of the long bones, acromegaly, giantism, diabetes insipidus, changes in sugar tolerance, convulsive states, personality change, nervous, mental and emotional status, conduct disturbance, growth and development, sex characteristics, fatigability, blood vessel and uterine inertia, a definite form of headache, abdominal and superficial pain and many other things.

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

SEX

The sex instance was nearly evenly divided:

Male	266	53.2%
Female	234	46.8%

AGE

The youngest of these cases was two years of age and the eldest sixty-four years of age.

Pre-adolescent cases		
Birth to 10 years inclusive	39	7.8%
Adolescent cases		
10 to 25 years	281	56.2%
Maturity		
25 to 50 years	170	34.0%
Old age		
Above 50 years	10	2.0%
	500	

Thus we see that pituitary disturbance occurs most commonly in adolescence. This statement is enhanced when it is realized that of the 170 maturity cases the great majority were nearer twenty-five years of age than fifty.

Referring again to the types of pituitary disorders verified by roentgenographic study, the 442 cases are divided as follows:

Those showing evidence of hypopituitarism	317	71.7%
Those showing evidence of hyperituitarism	84	19.0%
Those showing dyspituitarism	20	4.5%
Negative (one of these cases had a pituitary tumor)	21	4.7%

BASAL METABOLISM TESTS

A basal metabolism test was made on 119 patients who had distinctly *hypopituitary* sellae—with the following results (first satisfactory test used):

Basal metabolic rate—Normal group—		
Zero basals	3	2.5%
—1 to —10	41	34.4%
+1 to +10	19	15.9%
Diminished —10 & below	38	31.9%
Increased +10 & above	18	15.1%

Thus we see that there were:

Toward the + side	37 cases	31%
Toward the — side	79 cases	66.3%

Considering the basal metabolism tests in thirty-one cases who had a distinctly *hyperpituitary* sella, we had the following results:

Basal metabolic rate—Normal group—		
Zero basals	5	16.1%
—1 to —10	7	22.5%
+1 to +10	11	35.5%
Diminished —10 & below	6	19.3%
Increased +10 & above	2	6.4%

Thus we see that there were:

Toward the + side	13 cases	41.9%
Toward the — side	13 cases	41.8%

Summing up the basal metabolism tests, individuals with hypopituitary sellae appear to be inclined to have decreased basal metabolic rates, while those with hyperpituitary sellae show no definite basal metabolic inclination.

BLOOD CALCIUM TESTS

Considering the blood calcium content in patients with definitely *hypopituitary* sellae, fifty-nine cases so tested revealed the following:

Blood calcium below 9	21	35.5%
Blood calcium above 11	8	13.5%
Normal blood calcium between 9-11	30	50.8%

Those patients in eighteen cases tested who presented definitely *hyperpituitary* sellae showed:

Blood calcium below 9	9	50.0%
Blood calcium above 11	1	5.5%
Normal blood calcium between 9-11	8	44.4%

Thus we see that according to these figures whereas the blood calcium is within normal limits in approximately half of each group, in the other half it tends to be low in both the hypo- and the hyper-cases.

BLOOD SUGAR TESTS

The blood sugar was tested in 104 of the cases which gave definite X-ray evidence of *hypopituitary* sellae, with results as follows: (Method: Folin and Wu.)

Blood sugar below 90	28	27.0%
Blood sugar above 110	20	19.2%
Blood sugar between 90-110	56	53.8%

Those patients with *hyperpituitary* sellae in twenty-two cases tested showed:

Blood sugar below 90	1	4.5%
Blood sugar above 110	10	45.4%
Blood sugar between 90-110	11	50.0%

Thus we see that in approximately half the cases of both groups the blood sugar was within normal limits, while in the hypo-group there was a tendency for the blood sugar to be somewhat low and in the hyper-group a decided tendency to be increased.

CONVULSIONS

One hundred and forty-four of the 500 cases had recurrent convulsions. These cases were considered from the standpoint of X-ray of the sellae, as follows:

Hypopituitary type sellae	104	72.2%
Hyperpituitary type sellae	14	9.7%
Transitional type sellae	7	4.8%
Unclassified sellae (2 tumor cases and 1 encephalitis)	3	2.0%
Normal sellae	6	4.1%
No X-ray taken	10	6.9%

In 1914[1] and several times thereafter I reported cases of recurrent convulsions which I felt should not be designated epilepsy and which were due to under-secretion of the pituitary gland. One of the criteria for this diagnosis was X-ray evidence of a small, crowded or bridged sella, indicating under-secretion of the gland. In the above table, if we eliminate the ten cases in which no X-ray was taken —the three cases of tumor and encephalitis and the seven cases of transitional sella changes,—we have left 124 cases in which twenty cases (the normal and hyper-type sellae) did not conform to that criterion. In analyzing this situation I looked up carefully the fourteen hyper-type sella cases with the following results:

	Attacks Began During Adolescence (10 to 25)	*Clinical Evidence of Hypopituitarism*	*Additional Findings*	*Remarks*
Case 1	Yes, 11 yrs.	Yes	X-ray indicated increased intracranial pressure.	Cannot account for hypersella.
Case 2	No, 6 yrs.	No	Bad heredity; chronic interstitial trouble	Attacks should not be classed as pituitary.
Case 3	Yes, 14 yrs.	Polyglandular	Insane moron.	Attacks should not be classed as pituitary.
Case 4	Yes, 11 yrs.	Yes	Contracted visual field one eye.	Cannot account for hypersella.
Case 5	Yes, 19 yrs.	No	Attacks not true convulsions.	Attacks proved hysterical.
Case 6	Yes, 18 yrs.	No	Attacks lasted several hours; not true convulsions.	Attacks proved hysterical.
Case 7	Yes, 21 yrs.	No	Vertigo.	Attacks proved Meniere's disease.
Case 8	Yes, 14 yrs.	Yes	Temporal contraction of fields.	Cannot account for hypersella.
Case 9	No, 6 yrs.	None marked		Essential epilepsy.
Case 10	Yes, 17 yrs.	Slight	Attacks last several hours; BMR +19.	Attacks functional.
Case 11	No, 8 yrs.	Yes	Much over-weight	Cannot account for hypersella.
Case 12	No, 25 yrs.	No	Brilliant mind; depressed spells.	No true convulsions.
Case 13	No, 9 yrs.	No	No clinical hyper-symptoms; mentally backward.	Probably essential epilepsy.
Case 14	No, 46 yrs.	No	Encephalitis.	Attacks due to encephalitis.

In this analysis we see that seven cases began in adolescence, six cases showed some clinical evidence of hypopituitarism despite the X-ray findings of the hyperpituitary type of sella, five cases showed definite evidence of neurological symptoms, eight cases showed evidence of hereditary or constitutional symptoms, and one case was essential epilepsy. Therefore, I believe we are justified in discarding all of the fourteen cases from the standpoint of the convulsions being due to under-secretion of the pituitary gland. Two cases which showed contraction of the visual fields may have had a pituitary tumor but other diagnostic evidence of tumor was wanting.

In this group of cases the variation from the normal calcium and sugar content and basal metabolic rate is not particularly marked, only about half showing a change.

Of the blood calcium examinations on these cases, 38 per cent were diminished, while 12 per cent were increased. The blood sugar was diminished in 36 per cent and increased in 16 per cent. The basal metabolic rate was diminished in 36 per cent and increased in 27 per cent, approximately 50 per cent in each examination showing some change from the normal.

Therefore, 104 cases fulfill the requirements of recurrent convulsions as a result of pituitary under-secretion, each case showing X-ray evidence, the attacks beginning in adolescence, and definite clinical evidence of pituitary under-secretion in sixty-seven cases, or 64 per cent, and not so marked clinical evidence in thirty-seven cases, or 36 per cent. The increase or decrease in blood calciums, blood

[1]A Preliminary Discussion of Pituitary Disturbance as Related to Some Cases of Epilepsy, Psychoses, Personality and Other Obscure Problems.—*Southern Medical Journal*, Vol. VII, No. 8, August, 1914.

sugars and basal metabolic rates in recurrent convulsions of hypopituitary origin revealed nothing definite, but were suggestive of metabolic disturbance in slightly over half of the cases.

CONDUCT DISTURBANCES

In considering conduct disturbance, only gross irregularities like stealing, frequent drunkenness, flagrant immorality and running away from home were counted. Cases with insanity were excluded. So considered, there were sixty cases analyzed from the X-ray standpoint as follows:

Hypopituitary sellae	43	71.6%
Hyperpituitary sellae	14	23.3%
Normal sellae	2	3.3%
No X-ray taken	1	1.6%

From this summary we find over two-thirds, or 71 per cent, of these cases show the hypopituitary type of sella, and that fifty-seven, or 95 per cent, of them reveal some abnormal change in the fossa.

The blood calcium determinations done were as follows:

Diminished	4	22%
Increased	3	17%
Normal	11	60%

The blood sugar determinations:

Diminished	9	33%
Increased	7	26%
Normal	11	40%

The basal metabolic rates:

Diminished	11	34%
Increased	3	9%
Normal	18	56%

The clinical signs of hypo- or hyper-pituitarism in this group of sixty cases of conduct disturbance were confirmed by roentgenographic evidence in fifty-seven cases, whereas the blood chemistry and metabolic rates were below or above normal in the neighborhood of half the cases.

RELATED SYMPTOMS

In analyzing the 500 cases for other symptoms, I found the following among the chief complaints:

Headaches	115	23%
Drowsiness	17	3.4%
Fatigue	56	11%
Craving for sweets	7	1.4%
Obesity	27	5.4%
Pain	31	6.2%

When these cases are further studied as to the form of pituitary disorders, we note:

Hypopituitarism		
Headache	93	80%
Drowsiness	15	88%
Fatigue	46	82%
Craving for sweets	7	100%
Obesity	24	85%
Pain	26	83%
Hyperpituitarism		
Headache	16	14%
Drowsiness	2	11.8%
Fatigue	8	14.3%
Craving for sweets	0	----
Obesity	1	3.4%
Pain	4	13%
Dyspituitarism		
Headache	3	2.6%
Drowsiness	0	----
Fatigue	2	3.5%
Craving for sweets	0	----
Obesity	2	7.4%
Pain	1	3.2%
Tumors		
Headache	3	2.6%

(Other symptoms as listed were lacking.)

In the course of the neurological examination the eyes were observed in 394 cases, thirty-seven cases showing some intraocular pathology and nineteen showing changes in the visual fields. Most of these abnormalities were present in the hypopituitary cases.

ASSOCIATED ENDOCRINE DISORDERS

Associated with these 500 cases I found clinical evidence of imbalance of other endocrine glands in one hundred and thirty-five instances, as detailed below:

Hypothyroidism	87	17.4%
Hyperthyroidism	11	2.2%
Dysthyroidism	3	0.6%
Hypogonadism (both sexes)	25	5.0%
Hypoadrenalism	7	1.4%
Hypopinealism	1	0.2%
Pancreatic insufficiency (diabetes mellitus)	1	0.2%

ASSOCIATED NON-ENDOCRINE DISEASES

I further found, in reviewing the diagnoses, other medical and neurological conditions which were associated with endocrine disturbance.

Medical disease	97	19.4%
Neurological disease		
Functional	195	39.0%
Organic	52	10.4%

(Exclusive of the 104 cases of convulsive states.)

SUMMARY

I. From the analysis of 500 consecutive cases of pituitary disorder the clinical signs and roentgenographic findings coincide in the majority of the cases, 95 per cent, and together constitute the most reliable basis for diagnosis.

II. The basal metabolic rate shows a decided tendency to be decreased in hypopituitarism. There were an equal number on either side of the zero point in hyperpituitarism. The influence of the other endocrine glands and the difference in the function of the two lobes of the pituitary gland must be considered, as the over-secretion of the anterior

lobe is more frequent than that of the posterior lobe and is believed to have little or nothing to do with metabolism.

III. Blood sugar estimations in the hypopituitary cases did not conform in percentage to the "low sugar, high tolerance" ratio which is generally accepted. The number of examinations, however, is small and not conclusive. The sugar level in hyperpituitarism showed a definite tendency to be increased above the normal. It is beyond the scope of this paper to discuss the intricate role of the pituitary gland in carbohydrate metabolism.

IV. No deduction can be drawn from the blood calcium estimation. Attention, however, is called toward decreased calcium content in hypo- and hyper-pituitarism.

V. The frequency of outstanding symptoms has been discussed, especially noting the large number of convulsive seizures, originating in adolescence, in hypopituitary cases (21 per cent), conduct disturbance (12 per cent), and bitemporal headaches (23 per cent).

VI. Evidence of disorder in other endocrine glands is noticeably present in over 25 per cent of the cases analyzed. This is, of course, expected as it is generally accepted that when one gland is primarily disordered the function of the other ductless glands becomes disturbed.

VII. The frequency of medical and neurological conditions associated with pituitary disturbance is briefly given.

VIII. Closer observation of clinical evidence is desirable, and further research in the biochemical field as an aid in differential diagnosis of endocrine disorders is urged.

212 *West Franklin Street.*

DISCUSSION

DR. FRANK H. REDWOOD, Norfolk: The analysis of 500 cases of pituitary disorders which has been presented by Dr. Tucker is quite interesting. I am sorry, however, that he did not tell us something about the treatment of these conditions and his results of treatment. In my own work I find that treatment as a whole has been very unsatisfactory, due in part, I think, to the patient's lack of cooperation. Only in one type of disorder, viz., pituitary headache, will they cooperate fully, because here they have pain, but when there is a question of some metabolic disorder, particularly obesity, they do not seem to appreciate the importance of continuous observation and treatment.

I was much interested in his calcium determinations on the 124 cases of recurrent convulsions. Since 1927 we have been doing a routine calcium determination on every new office patient. Our conclusions have been, after several thousand tests, that the normal should not be between 9 and 11, but readings below 10 should be considered low. Cases of vasco-motor rhinitis, asthma and hay fever will be benefited by calcium therapy when their readings are below 10, but generally speaking they will not be helped with calcium determinations above 10 mgs. If we consider calcium readings between 9 and 10 mgs. as too low, the calcium determinations in Dr. Tucker's 124 cases of recurrent convulsions probably is of some significance. In my own experience, in the majority of all diseases in which there is an abnormal muscular activity, such as epilepsy, chorea, etc., the calcium will be below 10, and therapy seems to be a rather valuable adjunct in the general management of such cases.

I was particularly interested in his cases of conduct disorders. I think the majority of gross conduct disorders in children will show some endocrine imbalance, chiefly pituitary. This further confirms the statement that our endocrines have a great deal to do with the development of our conduct and our personality.

I would like to call your attention to a new test in the diagnosis of pituitary disease, recently described by Goldzieher and Gordon, of Brooklyn, and spoken of as the specific dynamic action. The basal metabolic rate is determined in the usual way, and the next day a protein meal is given consisting of the whites of three hard boiled eggs, a slice of toast and a cup of plain tea. After two hours rest the basal rate is again determined and the difference between the two readings is the specific dynamic action, which, if positive, is below the arbitrary figure of ten, and, according to the authors, denotes pituitary deficiency.

We should not lose sight of the fact, in speaking of pituitary disorders, of the hormonic action of all endocrine glands, and one gland compensates for the deficient secretion of another. So that at times the clinical picture presents the compensating gland as the offender, when in reality the deficient gland is simply calling for help. It is this close relation of the ductless glands that makes endocrine therapy so difficult and at times disappointing.

Question: I should like to ask Dr. Masters to say something about treatment, if he will.

DR. MASTERS, closing the discussion: Answering the question as to treatment, I think the pituitary gland therapy should be pushed, starting out with two grains (the whole gland, if we feel the case is bilobar). This should be given an hour before meals, which is considered the point of lowest gastric acidity. The extract should be increased up to twelve grains. Experience seems to show that doses above sixteen grains have no effect. If the case shows very marked hypo-symptoms, then I believe the gland product should be given by hypodermic. We start the patient on hypodermic injections, and continue for possibly three or four weeks, after which we put them on the gland extract by mouth. The posterior lobe has been effective in the bitemporal headaches, which are sometimes rather distressing to the patient. I think the results, while of course not perfect, have been reasonably gratifying.

PELLAGRA.*

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In talking about pellagra, I must first say a few words about nutrition in general since the two subjects are closely related.

Malnutrition may be the result of a faulty diet or it may occur in the presence of an adequate diet if there is some metabolic upset. The diseases which are properly called "nutritional diseases" are those which occur as a result of a defect in the diet. The diet may be defective in one of two ways: It may contain an excessive amount of the various food elements, or it may be deficient in one or more necessary factors. The body can take care of reasonable dietary excesses without immediate serious damage but we are not equipped to withstand a shortage in any essential food item for any long period of time. For this reason, among others, most dietary researches in the past several years have been concerned with the vitamins.

Vitamins have been compared to the spark plugs of an automobile engine. They represent a small part of the engine but in their absence the engine won't go. The dietary deficiency diseases require a different method of approach from that which we apply to most other diseases. We are inclined to look at disease as due to the presence of some detrimental factor, such as a microbe, a toxin, etc., but with the dietary deficiency diseases we are called on to accept the fact that the etiological factor is an *absence* of something normally present, and proper treatment demands the immediate restoration of this missing factor if the disease is to be cured.

The majority of the workers in nutrition are biochemists and publish their findings under chemical terminology. This makes it difficult for one not familiar with this field to get the essential information in a form suitable for practical use—say, beans and tomatoes. In order to clarify this terminology in regard to pellagra, I will have to briefly run over the list of the vitamins:

Vitamin A prevents xerophthalmia and is found in butter, cream, egg yolk, carrots, yams, liver, cod liver oil, halibut liver oil. Xerophthalmia is a rare disease in this country, and lack of vitamin A does not particularly concern us since everyone seems to secure enough of it.

Vitamin B prevents beriberi, and is found in whole grain cereals, the germ of wheat, the outer coating of rice, beans, peas, leafy vegetables, and yeast. Beriberi is occasionally reported in the United States; a few cases have been found in Virginia.

Vitamin C prevents scurvy, and is found in citrus fruits, cabbage, tomatoes, leafy vegetables, and potatoes. All of you have probably seen cases of infantile scurvy.

Vitamin D prevents rickets, and is found in fish liver oils such as the cod, halibut, and salmon. Rickets is one of our most prevalent dietary deficiency diseases, particularly in our Northern cities.

Vitamin E prevents sterility in guinea pigs but has not been shown to have any definite effect on humans.

There is no vitamin F.

Vitamin G is the last of the list at the present time, and may or may not be identical with the pellagra preventive factor. I prefer to call the food essential, factor or vitamin, which prevents pellagra, the "pellagra preventive vitamin," instead of vitamin G. A question I am frequently asked is: Do you consider vitamin G and the pellagra preventive vitamin identical? The answer is that they may not be the same if your vitamin G is determined by growth test on rats, because the factor which causes rats to grow may not be the one concerned in human pellagra. At the present time, much of the work being done in this country on vitamin G has as its basis the failure of rats to grow on a properly restricted diet. The results of such experiments should not be applied to human pellagra since it is by no means certain that the food factor being tested in this manner is the factor which prevents pellagra. Therefore, in order to avoid confusion, I prefer to use the term "pellagra preventive vitamin." Then when I say that a food does or does not contain the pellagra preventive vitamin, I mean that it has been tested either in the prevention of

*Read before the Seaboard Medical Association of Virginia and North Carolina at Norfolk, Va., December 5-7, 1933.

human or canine pellagra. In the present stage of our knowledge, we have no unit for measuring and expressing the pellagra preventive value of a food and it is my opinion that in order to obtain satisfactory and reliable results, experiments must be conducted either on humans or dogs.

Pellagra is by far the most serious dietary deficiency disease in this country. Although rickets is widespread and serious, pellagra causes a greater economic loss since it disables and kills so many adults. For example, in 1930, in North Carolina there were 1037 deaths from pellagra, or six times as many as from typhoid and paratyphoid, four times as many as from diphtheria, twenty times as many as from malaria, and about two and one-half times as many as from these diseases combined. In this country in 1931, 5853 deaths from pellagra were reported, and, since the death rate of the endemic disease probably does not exceed about 3 per cent, this represents about 150,000 cases of pellagra. When we consider that we have the knowledge which would prevent practically all of this illness if it could be applied, it is time for us to look the situation over.

Let us first look at the geographical distribution of the disease in this country. Of course, sporadic cases of pellagra occur all over the country, in people who take a restricted diet either as a result of some dietary fad or through food idiosyncracies. More than 90 per cent of the deaths from pellagra occur in the Southern States (from Virginia through Texas), but this does not tell the whole story. It is not distributed evenly throughout these states. Pellagra is essentially a rural disease; it never has been a problem in the large cities of the South. In our cities, cases are found associated with chronic alcoholism where the food intake has been greatly restricted, and a few cases are associated with diseases of the gastrointestinal tract which interfere with the utilization of food. Cases such as these may, and do, occur anywhere. The cases with which I will deal in this paper may be regarded as endemic pellagra in that they occur year after year in the same sections and involve large numbers of people. Let us look at the distribution of the disease in Virginia: In 1932, there were 500 cases reported. Of these, 45 per cent occurred in six counties, namely, Henry, Lee, Patrick, Smyth, Washington, and Wise. Lee county leads the state with ninety-two reported cases, or almost one-fifth of the number reported for the State. If we take North Carolina for the first eight months of this year, there were 717 reported cases. Of these, 48 per cent occurred in seven counties, namely, Alexander, Bladen, Guilford, Mecklenburg, Richmond, Robeson, and Wayne. If we looked at the rest of the Southern States we would see a similar irregular distribution. What is the cause of this peculiar distribution, what factor do we find common to all of these areas of high pellagra incidence? It is a restricted food supply. We find that these sections are engaged primarily in raising non-food crops, such as cotton and tobacco, or they contain rural industrial communities, such as cotton mill villages or mining towns. Pellagra is not a problem in rural sections devoted to the raising of livestock or food crops.

Another striking peculiarity of the endemic disease is its seasonal variation. In this country it is strictly a disease of early spring and summer. A study of this feature of the disease has shown that pellagra begins to increase in the early spring and reaches a peak in the month of June when almost 40 per cent of the cases have their onset. What is the cause of this great seasonal variation? The answer again is a variation in the diet. A study was made of the diet by months, and the striking thing is the great increase in the consumption of milk, fresh vegetables and fruits coinciding with the disappearance of pellagra and, of course, the decrease in these same items during the season preceding and during the pellagra increase.

There is one other factor of importance in the occurrence of endemic pellagra, and this is the economic condition. Usually, pellagra incidence is low during years of relatively high income, and high during years of low income. It must be kept in mind, however, that this is only true where the economic changes affect the diet so as to decrease or remove those items which furnish the pellagra preventive factor. Under some circumstances, economic depression may even improve the food supply in this respect. The present depression has effectively demonstrated this factor. In the early days of the depression, when the price of cotton went below the cost of production, the first effect was a curtailment in the food supply, particularly of the small or tenant farmer, with a resultant increase in pellagra. However, as the price of cotton continued low and credit became more restricted

it became absolutely necessary to produce a greater quantity and variety of food at home, which caused the diet to become more liberal and a marked reduction in pellagra incidence followed. Thus, in North Carolina the reported deaths from pellagra increased steadily to the high figure of 1031 in 1930, and fell in 1932 to 465. Thus the depression, which originally caused an increase in pellagra, through its severity and long continuation has now led to a more liberal diet, with a marked reduction in the occurrence of pellagra.

Although these studies give valuable indications as to the factors which influence the incidence of pellagra they only further strengthen and confirm more direct experimental evidence. Goldberger and his associates organized and carried out a complete series of human experiments, the results of which determined beyond any reasonable doubt the relationship of diet to pellagra. There were three questions which were answered by experimentation: 1. Can the disease be prevented by diet alone? 2. Can the disease be produced by a deficient diet? 3. Can the disease be cured by feeding a proper diet? In securing the answers to these questions it was proven by experiment with the human disease that it is due to a diet deficient in a specific dietary essential, or vitamin.

The first observations on the question of prevention were made in three large orphanages and a portion of a large insane asylum over a period of three years. Four hundred and fourteen individuals who had had pellagra were observed. The only change made in these institutions was the addition of meat, milk and legumes to the diet. There was one recurrence within this group as compared with a recurrence of 47 per cent in a control group of thirty-two persons maintained on the original institution diet. In one institution, a return to the original institution diet following the study caused an incidence of pellagra of approximately 40 per cent in less than a year. Return to the modified diet was again followed by complete disappearance of the disease over a period of observation of fourteen months. Although the results of this experiment alone are sufficient to rule out the possibility of infection, an attempt was made to transmit the disease from advanced cases of pellagra to healthy human volunteers by means of blood and excreta. All of these attempts failed.

Using a diet of the same general composition as that upon which pellagra had occurred in the institution, the disease was experimentally produced in six out of eleven volunteers. Later, in connection with experiments on epilepsy, Walker and Wheeler experimentally produced the disease with a similar diet in seventeen of eighteen epileptics, while a control group of fifteen individuals ate the same diet with the addition of turnip greens for one year without a single case of pellagra occurring in the group.

Having determined that the disease can be produced at will in any number of individuals on a properly restricted diet within a period of about six months, the Public Health Service workers undertook a long series of preventive tests which have now exceeded 300 individual tests on twenty-three different foods.

These tests furnish us with considerable data on the etiology of the disease. They were conducted by using a basal diet similar to the one which produced experimental pellagra to which the indicated quantity of the foodstuff to be tested was added. If pellagra occurred in the group in spite of the supplement, it was concluded that the food in question added little or none of the pellagra preventive factor. If no pellagra occurred in the group in the course of an entire year on the diet, it was concluded that the foodstuff, in the quantity used, was a satisfactory source of the pellagra preventive vitamin. With this method of testing it has been found that the pellagra preventive vitamin is unequally distributed in a wide variety of food stuffs and bears no relationship to the distribution of any other known vitamin. The tests have been conducted with a large variety of foodstuffs and have furnished us with reliable and accurate information on the actual pellagra preventive value of foods. Although this factor, or vitamin, has not been isolated, and its mode of action in preventing the disease is not known, the information given here as to its distribution in various foods is the essential data needed for the prevention and treatment of the disease.

In addition to these human experiments, extensive experimental work on dogs has given us additional valuable information. Those of you who have had any wide experience with hunting dogs in the South have in all probability come across cases of blacktongue. Blacktongue of dogs is the analogue of pellagra in humans. It may be pro-

duced at will by feeding a properly restricted diet and it may be prevented or cured by correcting the diet. Our method of experimentation with dogs is to add the article of food to be tested to a diet which we know will produce blacktongue. If no blacktongue occurs in one year it is concluded that the food is a good source of the preventive factor. These results are then checked, if possible, on human pellagra. Using this method of testing, we have determined the pellagra preventive value of a considerable number of foods. The success or failure of your treatment of pellagra depends on how successful you are in getting these protective foods into the patient. A considerable number of foods have been tested and found to have such little pellagra preventive value that they are worthless regardless of the quantity or combination used. Some of these foods are cornmeal, white flour, oatmeal, molasses, butter, lard, fat salt pork, carrots, onions, turnips, and sweet potatoes. The more important foods which have been proven by test to be most valuable in pellagra are milk, including buttermilk, skim milk and evaporated milk; lean meats and fish, including beef, pork shoulder, liver, canned corned beef, canned salmon and haddock; vegetables, including turnip greens, tomato juice, green peas, collards, kale, spinach, green cabbage, and green beans. Yeast and wheat germ have been found to be rich in the pillagra preventive vitamin.

Yeast is the richest source we now know of the pellagra preventive factor and is therefore very valuable in treatment and prevention. By yeast, however, I do not mean yeast cakes but a pure dried yeast, either brewers' or bakers'. The yeast in yeast cakes is all right but the quantity is too small. I am often asked if there is any difference in the pellagra preventive value of brewers' and bakers' yeast. So far as we know there is no appreciable difference as long as a pure, unadulterated yeast is used.

The present depression has shown us the way to the prevention of endemic pellagra in this country. What is necessary is nothing more nor less than a change in the dietary habits of a large section of the population. Practically, this is an exceedingly difficult thing to bring about, but by proper education it can be done eventually. The depression forced the production of food crops with a corresponding change in diet in the right direction. Some of this land in all probability will never go back to cotton but it is safe to predict that when the production of cotton becomes barely profitable and more acreage is turned to its production there will be another increase in pellagra.

Pellagra presents little difficulty in diagnosis after a few cases have been studied. The syndrome is so typical that it should not be confused with anything else. It has been taught that the diagnosis of pellagra rests on the three d's—diarrhea, dermatitis, and dementia. This is a neat little phrase but there are two things wrong with it—it is incorrect and it doesn't tell the whole story. Many cases of pellagra don't have diarrhea, only about 4 per cent progress to the stage of dementia, and some do not have dermatitis. This phrase also omits two important manifestations of the disease, namely, stomatitis, which occurs very frequently, and paresthesia.

In treatment, drugs are useless. Success or failure depends on the diet used. A large percentage of cases show a diminution or absence of hydrochloric acid in the gastric juice; therefore the administration of dilute hydrochloric acid may be indicated to improve digestion. A suitable mouth wash is indicated for the stomatitis. Other than this, treatment is purely dietary. I have already given you a list of the foods which contain the vitamin and I have mentioned the value of dried yeast which should be given in large doses. You can't afford to fool around with a few tablets—the patient should get one-half ounce of yeast a day if a child, and one ounce a day if an adult. It may be given in milk, tomato juice, broth, or just suspended in water. This quantity should be divided into three or more doses during the day. More important even than the use of yeast is the correction of the diet. Milk should be given freely. Although it is not one of the richest sources of the vitamin, its ease of digestion enables the patient to handle quantities of it satisfactorily when solid food cannot be taken. If there is severe vomiting, food must be given in small quantities at frequent intervals, and more reliance placed on milk and meat broths and juices. Lean meats and liver are two additional sources of the vitamin that should be used freely and the vegetable side of the diet made up of vegetables containing the vitamin. It is desirable to have the patient in a hospital because of the better control that can be maintained over the diet. However, you can't put the patient to

bed and simply order a high vitamin diet. If you do, he will get, most likely, orange juice, lettuce and cod liver oil in large quantities, and you might as well throw the cod liver oil out the window as far as pellagra is concerned. The particular items of food required must be specifically ordered and it should be seen that they actually go down the patient's throat—and stay down. I know of cases in which the physician has said that the patient had pellagra in spite of milk, lean meat, etc., but on investigation it was found that, although these foods were served, the patient didn't care for them and ate only the bread, grits and gravy and sent the rest back to the kitchen.

If the patient must be treated at home it is more important than ever to closely supervise what he eats. It is useless to *order* lean meat and milk for a family that has no means of obtaining such food. It is up to you to see that the diet in that household is actually improved in the proper way. Your mortality rate will depend largely on your ingenuity in getting the patient to take the necessary foods. And, finally, let me caution you once more about putting your faith in drugs. There is no drug in the pharmacopoeia which is of the slightest value in the actual cure of the disease.

THE TREATMENT OF PELLAGRA—A CRITICAL REVIEW.*

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The theories of the toxic and infectious nature of pellagra have been largely discarded since the important contributions of Joseph Goldberger and his associates. The experimental production of pellagra in humans by means of dietary restriction alone has established that pellagra is primarily a deficiency disease. In 1915, Goldberger and Wheeler[1] produced pellagra in six out of eleven convicts by restricting their diet consisting principally of maize products. The dermatitis in these cases was not entirely typical and some authorities[2] questioned whether the disease produced was actually pellagra. However, Walker and Wheeler,[3] while investigating the effect of prolonged administration of a diet low in the pellagra-preventive factor on epilepsy, produced pellagra with typical dermatitis in seventeen of their eighteen subjects, thus demonstrating beyond question that a diet lacking in certain substances could produce the disease.

In 1923, it was reported that pellagra could be prevented by a proper diet. Goldberger, Waring and Tanner[4] studied the effects of dietary changes in a large number of institutional inmates over a period of several years. They found that on the original institutional diets about 60 per cent of the inmates had been afflicted with pellagra. A well-balanced diet was provided, and during a three-year period there was no new case and only one recurrence. The original diet was then resumed and pellagra recurred in about 40 per cent of the inmates. When the balanced diet was once more started, symptoms of pellagra disappeared and no new cases developed. This study proved that a proper diet would prevent pellagra, but no effort was made in it to determine what food substances were specifically prophylactic.

Numerous foodstuffs were tested for their pellagra-preventive properties in a series of subsequent investigations. In 1925, Goldberger and associates[5, 6] found that pellagra could be prevented by the addition of dried brewers' yeast to an otherwise deficient diet. The "P-P" factor was the name first given to this pellagra-preventive substances in yeast. It has since been identified in many other foods, and it is now classified as vitamin G (or B2). It is practically absent in refined products such as cornmeal, wheat flour, oatmeal, molasses and cane syrup.[7-8] Yeast, liver, lean meat and meat-extracts have been found to be rich sources of vitamin G; milk, eggs, and vegetables contain sufficient vitamin to be pellagra-preventive when given in reasonably large quantities.

Therapeutic studies are difficult to evaluate in a disease which so often seems to improve without

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treatment. For years the remissions in pellagra have been considered to be spontaneous, but, in view of modern work, it appears more likely that these so-called spontaneous remissions are really due to an unrecognized addition of vitamin G to the diet. Spies,[9] in a recent observation which apparently favors the spontaneous nature of the remissions, noted disappearance of the dermatitis in hospitalized pellagrins while they were maintained on a diet known to be deficient in vitamin G. But Ruffin and Smith[10] carried this observation one step further and found that the dermatitis in such instances returned on re-exposure of the skin to sunlight, unless meanwhile vitamin G had been supplied. This latter work suggests that solar radiations may be partially responsible for the skin lesions in patients made susceptible by deficient diet. Both Spies, and Ruffin and Smith reported that there was no other improvement in the symptoms of pellagra until vitamin G was added to the diet. Spies' study, therefore, constitutes further evidence that the remissions in pellagra are not spontaneous in origin. Ruffin and Smith, and Walker and Wheeler,[3] observed prompt improvement of all symptoms of pellagra in a few cases as soon as known deficient diets were replaced by balanced diets. This is proof that a balanced diet alone is therapeutically active and its points out the necessity for careful dietary control in all therapeutic experiments.

The ideal situation for studying the effect of a particular substance in the treatment of pellagra necessitates the maintenance of the subject on a diet deficient in vitamin G (but adequate in all other respects) while the effect of that substance is being tested. If this method cannot be used, it is essential at least that the experimental and control subjects be given identical diets before interpreting the specific therapeutic activity of any supplement. The results of studies on the value of arsphenamine,[11] sodium thiosulphate,[12] iron,[13] lime water,[14] insulin,[15] typhoid vaccine,[16] boiled lean ham meat[17] and animal fats[18] in the treatment of pellagra are entirely inconclusive because these investigations have been improperly controlled. Ridlon's study,[19] in 1916, demonstrated that when a well-balanced diet was provided, the drugs in common use for pellagra at that time were of no additional benefit.

Various forms of yeast and liver have been studied for their curative value in pellagra. Goldberger and Wheeler found in their work on the prophylactic value of yeast that active cases of pellagra improved on a diet in which dried brewers' yeast furnished nearly all of the vitamin G. Walker and Wheeler were able to show that the pellagra produced in five of their epileptics by dietary restriction, was completely cured when yeast alone supplemented the diet which caused the disease. This seems to be conclusive proof that yeast may be specifically curative when other sources of vitamin G are inadequate. There has only been one clinical report in America on the value of yeast in therapy. Carley[20] recorded excellent results in a large series of ambulant pellagrins treated with dried brewers' yeast, but since no dietary control had been attempted in these cases, he remarked that conclusions were not warranted about the value of the yeast.

Because yeast is effective when the diet is deficient in vitamin G, it does not follow necessarily that it is beneficial when a well-balanced diet is provided. The author[21] has recently compared two groups of hospitalized cases, both of which received a high vitamin diet. One group was given yeast in addition to this diet, and no definite cumulative effect from its administration was observed. The lack of an added improvement in the yeast-treated cases suggests that only a limited amount of vitamin G can be utilized in the human body. Yeast is cheap and there is no objection to using it as a supplement to insure an abundance of available vitamin G, but its administration together with a well-balanced diet cannot be considered as necessary in routine treatment.

Liver has lately been employed as a source of vitamin G in pellagra therapy. Ruffin and Smith demonstrated that the oral administration of an aqueous extract of liver was therapeutically active by showing that pellagrins on a special restricted diet did not improve until the extract was given. All then responded promptly. These authors found that on the same diet, there was no beneficial effect from intramuscular administration of Liver Extract No. 343 in doses of 5 c.c. daily It remains to be determined whether liver preparations are advantageous when a balanced diet is available.

A major difficulty in treating pellagra is to supply vitamin G to cases with severe vomiting and diarrhea. The problem might be answered by a

practical method of administering the vitamin parenterally. Ramsdell and Magness[22] reported favorably on the use of intramuscular injection of 2 c.c. daily of Liver Extract No. 343, but since their twenty-two patients were at the same time receiving a balanced diet, it seems, from the work of Ruffin and Smith, that the benefit was more probably attributable to the diet than to the liver injections. More impressive is the work of Spies,[23] who prepared a solution of wheat germ, high in vitamin G content, and administered it intravenously to a small series of pellagrins who were kept on a vitamin G deficient diet. They all improved promptly. Next, he gave the same solution to four pellagrins who, because they were vomiting, were given nothing by mouth for several days. The vomiting soon ceased, and their appetites returned and they made uneventful recoveries. An effective parenteral method of giving vitamin G would be a great advance in the treatment of pellagrins with severe gastrointestinal disturbances.

The treatment of pellagra has been complicated by a large number of unscientific observations. A review of the few well-controlled studies seems to establish the following facts: first, pellagra can be produced by a diet deficient in vitamin G, and it can be prevented by a well-balanced diet or by any substance rich in vitamin G; second, some cases of pellagra can be cured by a well-balanced diet or by individual substances such as yeast and aqueous liver extract orally, when such a diet is not available; third, whereas symptomatic remedies are useful, no drug is of proven preventive or curative value in pellagra.

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DISCUSSION

DR. H. B. MULHOLLAND, University: At the University our interest in pellagra was stimulated about six years

ago when we observed that the incidence was increasing out of proportion to the increase in hospital admissions. This was also true in the general population as shown by vital statistics. In the last five years the deaths from pellagra have increased greatly over the preceding five years. Strangely, this increase began in the period of prosperity. Dr. Blackford told me this morning that the deaths last year had decreased, when one would expect them to increase in a period of depression.

Many methods have been tried in the treatment of pellagra, and each one of these methods has been reported to give favorable results. This is probably due to the fact that spontaneous remissions occur, even under the same conditions which apparently result in the development of the disease. It may reoccur the next spring or fall, but the clinical manifestations disappear.

The difficulty in evaluating any treatment of pellagra is the fact that we have not had a yardstick by which to measure it. For instance, in pernicious anemia we have the reticulocyte response, which is an excellent measure of the efficacy of our treatment. In pellagra we have nothing comparable. The work done at Duke University in the prevention of dermatitis by the use of liver extract is encouraging and perhaps will result in the establishment of a reliable method of controlling treatment.

I think, in conclusion, however, one might say that the main and most valuable method of treating pellagra is to give an adequate diet; and that does not mean simply an average adequate diet, because it is quite probable that patients who develop pellagra are not able to assimilate enough vitamin from the average diet but need a surplus of vitamins in the diet.

LESIONS OF THE CERVIX UTERI.*

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In recent years the cervix uteri is claiming attention of the profession to a greater extent than ever before.

The diseases affecting the cervix are principally: Laceration, ectropion, inflammation, ulceration, granuloma, nabothian cysts, endocervicitis, myoma, polypus, cancer, chancre, chancroids, syphilitic ulcers, atresia and stenosis.

Laceration of the cervix uteri results from child-birth and forcible dilatation. Following labor there is always more or less laceration. In most cases the laceration heals fairly well if not disturbed by infection. In many cases the infection does not admit of ready healing of lacerations. The torn surfaces granulate and finally heal by the development of cicatrization, but do not heal together. In many cases there develops an ectropion with irritation and chronic inflammation. The symptom most prominent in unhealed laceration and its sequela is leukorrhea, and it is this that sends the patient to a physician. Then it is the duty to carefully examine the patient on a table, both bi-manually and through a speculum, with a good light. Incidentally, every woman who has been delivered should be examined from six to seven weeks after delivery, and at indicated intervals thereafter if the pelvic organs at the time of such examination are not found to be in a satisfactory condition. In this way, and in this way only, can the woman have the assurance that she is well. Thereby, it is possible to prevent future pathology of a more serious nature. A tear in the cervix and the subsequent scar tissue formation cause the ducts of the cervical glands to become obstructed. With the glands continuing to secrete, there is an accumulation of the secretion, which distends the glands, forming little cysts. The chronic inflammation increases the obstruction and the irritation. As a result of the laceration and inflammation, the cervix may become filled with small cysts (cystic degeneration) and very much thickened and quite heavy. The constant over-distention is followed by rupture of the cysts and the discharge of their contents. Inflammation of the cervix includes acute cervicitis, chronic cervicitis (including cystic cervix), erosions, granuloma and ulceration.

Cervicitis may be acute or chronic. Acute cervicitis is usually the result of infection following child-birth or gonorrhea. Chronic cervicitis may follow acute cervicitis or may appear as chronic changes following laceration of the cervix during labor, abortion or instrumental dilatation.

Erosion of the Cervix is a peculiar condition in which the squamous epithelium is replaced by columnar epithelium over certain areas. It is usually seen about the external os and extending outward for a variable distance, giving a red, inflamed ap-

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perance, with a leukorrheal discharge of variable quantity.

Ulcer of the Cervix, like an ulcer elsewhere, is an area from which the epithelium has disappeared, the base of the area being formed by granulation tissue. An ulcer of the cervix may be a simple ulcer, due simply to inflammation, with tissue destruction, or it may be syphilitic, chancroidal, tuberculous or cancerous. Granuloma of the cervix is an elevated, friable dark red mass on the cervix of variable size. It is generally of a dark red color, bleeds easily, and there is much leukorrheal discharge. Along with the above are pelvic and low back pains. It is sometimes quite difficult to differentiate on examination from malignancy. While the super-structure of such lesions is quite friable and bleeds freely, the base is very hard and tough—fibrosis.

Polypus is an elongated red growth that protrudes from the os, or into same. It is attached to one of the lateral walls of the cervical canal, and bleeds easily.

Myoma of the Cervix: Occasionally a myoma (a tumor composed of muscle tissue) arises in the cervix, but most frequently this variety is found in the uterus. It is hard and regular in its feel, and of variable size.

Atresia and Stenosis of the Cervix may be congenital, or may be due to infection, or over-treatment. The cautery, when used too liberally, may be followed by adhesions and cicatrization; atresia and stenosis are the result.

Ectropion of the Cervix accompanies laceration and is an eversion of the cervical lips.

Endocervicitis is an inflammation in the cervical canal, which extends from the ostium to the internal ring. It is a part of the process of inflammation of the cervix, with which it is frequently concurrent.

Cancer of the Cervix is a far more frequent lesion of the cervix than would be suspected by one who has not given the subject special consideration. In a very recent article by Barton Cooke Hirst, many astounding statements are made. For the benefit of all of us, I shall ask your indulgence by quoting in part:

"One of every eight women who reach the age of 35 will have a cancer. The disease ranks second among the causes of death in America. The mortality is increasing, rising from 63 to 96 per hundred thousand in seven years, or more than 50 per cent increase. In fifty American cities during the same time it has increased from 75.1 to 122.7 per hundred thousand. Of cancers in women 25.83 per cent are in the genital organs; 80 per cent of these are in the cervix uteri. Of four women who come to a physician with cancer of the cervix, one may survive. In spite of skilful treatment, *three* will die within five years. The proverbial ounce of prevention is the best treatment of cancer. The late John G. Clarke once said he never saw a cancer in the cervix if it had been successfully repaired. While I couldn't quite agree, but undoubtedly the immediate, intermediate or secondary repair of the cervix after child-birth will usualy prevent a cancer there in later life. The whole problem of securing better results resolves itself, therefore, into the best means of recognizing the disease early."

Unfortunately cancer in the cervix, like cancer elsewhere, causes no pain in the early stage. This is why so many women do not early seek advice and treatment. Frequently it is the case that women with cancer of the cervix disregard bleeding and continue to go blindly along in oblivious desuetude till the cancer is out of bounds before seeking advice.

Cancer is a disease essentially of middle and late life; however, it is not unknown in youth.

About the first symptoms which the woman observes is a spotting or staining between menstrual periods and excessive or prolonged menstrual periods. After the menopause, spotting, staining, bleeding or profuse hemorrhage, constitute the line of march, which ends invariably at the grave when unheeded and untreated.

Any woman who is bleeding, whether it be spotting, staining or flooding, is a candidate for careful investigation. Not every case of bleeding is cancer, but every bleeding should be suspected of cancer till proven otherwise. In this way, and in this way only, will the mortality from cancer be reduced.

Early cancer can be cured; late cancer rarely, if ever. In examining the cervix for cancer, as in every other gynecological examination, the patient should be placed on an examining table and the examiner should have a satisfactory light. Incidentally, a Winchester hunting light is cheap and quite satisfactory; in fact, I have discarded the more elaborate lights and use one nearly all the time.

Diagnosis

The history of bleeding has been discussed, but is so important that it demands repetition. The amount varies from mere spotting or staining after trauma following a douche, intercourse or digital examination (an early symptom) to prolonged or profuse hemorrhage.

A. H. Curtis says: "Hemorrhage from the uterus in a woman definitely beyond the menopause is always to be regarded as positive evidence of cancer until a thorough examination demonstrates conclusively that no malignancy is present. During the child-bearing period this most important symptom loses much of its value, because bleeding may be due to many other causes. After the menopause is well established, however, a cervical polyp is the only other frequent lesion which commonly gives rise to vaginal loss of blood (notable hemorrhage from polypus is unusual). A much less common cause of bleeding at this age is a pedunculated fibroid tumor; the fibroid may appear at the cervix or may be concealed within the uterine cavity."

Digital Examination reveals friable tissue which bleeds freely upon palpation of the cervix. No other objective symptom equals in importance the value of this evidence. Examination with the index finger is preferable to employing two fingers. When the cervix is beyond reach, it may be rendered more accessible to the examining finger by simultaneous insertion of the mid-finger into the rectum—the recto-vaginal method.

The cervix is often enlarged. It seldom attains to more than twice its normal size. Ulceration may be evident. Areas of varied consistency, some unduly firm and some honey-combed, are encountered.

Local extension is characterized by infiltration of the adjacent vaginal wall, parametrium and broad ligaments. Determination of the degree of broad ligament fixation is of the utmost importance; this necessitates careful bimanual palpation with notation of the mobility of the uterus.

One must always have in mind the possibility of a pre-existing thickening. In this way, one may find patients who were formerly regarded as incurable that may respond to treatment. Even those who would appear incurable should be given the chance of cure. Occasionally one will be surprised by a cure in what appears to be a hopeless case.

The speculum should be used, but with a due realization of its limited value; it is to be used, however, in every case examined, and with great gentleness; otherwise, a hemorrhage may follow. Recently a test for the presence of cancer in the cervix was suggested by Shiller, which, according to reports from various clinics, appears to be of great value. Graves, in a report which appeared after his death, was most enthusiastic. The test consists of swabbing the entire cervix and portio-vaginalis with Lugol's solution. Same should be applied with a liberally soaked sponge, beginning anterior to the cervix and allowing the excess to flow over the cervix. The staining, in the absence of cancer, is a smooth, evenly distributed mahogany brown. Cancerous areas do not take the stain. Absence of staining, therefore, is to be regarded as cancer. Graves states that recently healed ulcers do not accept the deep staining of a non-cancerous cervix, although there is some staining of such areas, but they are sharply defined in outline.

In my experience, which up to the present has been quite limited, the test has proven to be accurate. Its simplicity commends it.

Excision of tissue for the establishment of the diagnosis of cancer should not often be necessary, but it is frequently of great value. Tissue may be looped off with an endotherm loop for diagnostic verification. It is well to use a fairly large loop rather than a small one, so that the specimen will not be coagulated, as is sometimes the case when a small loop is used. The advantage of the endotherm lies in the superficial wall coagulation of the excised area; the disadvantage lies in the possible coagulation of the entire specimen (with a small loop). It sometimes happens that the cervix is quite normal in feel and appearance while cancer is present in the cervical canal or in the body of the uterus. If the cervix reveals no cancer, and the history and symptoms indicating a possible malignancy are present, the cervix should be dilated under anaesthesia and scrapings taken for microscopic study. "Non-stained cells give more information than stained specimens," according to A. H. Curtis.

Atresia and stenosis are obvious and quite easily proven. Atresia is discovered at puberty, when the patient fails to menstruate, has all the aura and a mass is found in the supra-pubic region.

Stenosis may be congenital or acquired. Recently, the over-use of the cautery blade in the canal has been responsible for many cases of acquired steno-

sis. The use of radium in the cervix may be responsible for a similar condition in the event that a proper follow up is not made.

The repair of a laceration is a surgical procedure. The repair may be made immediately following labor, but the procedure is open to serious debate, as any procedure on the cervix immediately following labor adds the additional risk of infection. Immediate repair is indicated in the presence of hemorrhage due to tearing of the circular artery; it is also proper if the tear is extensive and the cervix can be well exposed, and is fairly accessible and with favorable general conditions. Lacerations that have healed over by granulation should be treated by the fine cautery blade, at a cherry red heat, five or six weeks after delivery. In using the cautery blade, great care should be taken not to invade the os beyond the uppermost area of the laceration. The cauterization should extend to the depth of the granulation and from the outer limit of the os to the outer limit of the granulation margin. The lines of the cauterization should be so placed that there is an area of uncauterized tissue about one-quarter to one-third of an inch wide between each of the lines. The tendency is to overdo the procedure at the first sitting. It is much better to repeat the procedure after three or four weeks, if there are still unhealed areas. The patient should always be informed that there will be some discharge following the treatment for at least three weeks. The same method may be used in treating chronic ulceration and granuloma as suggested for granular laceration, which includes ectropion. Nonspecific inflammations are handled in a similar manner. Cysts may be punctured with a cautery point or preferably with the positive pole of a coagulation instrument; still better by using a bipolar tip (in the Cherry holder). The current is so regulated that the cystic area about one-eighth to one-quarter inch will be coagulated. This will usually take about 500 m.a. for about ten seconds. The glands are thus destroyed with their respective retention cysts.

The huge succulent chronic inflammatory cervix which bleeds freely may be cured by using the negative plate of a surgical diathermy outfit on some indifferent part (buttocks, thigh, back or arm) and by inserting the positive pole, needle or tip, in various areas throughout the presenting cervix. One should first decide on the depth and area of coagulation desirable about each insertion. The instrument should be previously adjusted unless one is familiar with the particular instrument in use. This can be determined by testing it on raw beef. The areas coagulated should never be so closely spaced that there is complete destruction of the intervening tissue. There is always destruction of tissue beyond the area of apparent blanching. Following all these procedures there is sloughing of the coagulated tissue for three to four weeks; there is more or less foul odor. At times there may be bleeding as the destroyed tissue separates. The patient should be told this and directed to notify the attending physician if hemorrhage of consequence develops. Following coagulation, in about four weeks the cervix is found to be clean and shrunken, in proportion to the degree of coagulation. All of the above procedures are available, in skilful hands, without anesthesia.

Endocervicitis is generally associated with a cervicitis or an ulceration and an ectropion. The two procedures which offer a cure are (1) coagulation with a Cherry bipolar electrode, or (2) the use of Hyam's conization method. The technique of the Cherry technique consists in using a predetermined amount of current which will coagulate to a depth of one to two m.m.

With the speculum in place and with a proper light, the Cherry electrode is inserted into the cervical canal as far as the internal ring; then withdrawn about one-half to one c.m. The predetermined current is then turned on with a foot switch, while simultaneously the electrode is slowly rotated within the canal. Usually about twenty to thirty seconds is sufficient time. Before turning on the current, it is well to loosen the set screw on speculum enough to allow the cervical lips to contact the electrode. It must be remembered that the electrode must be in the cervix throughout the time when the current is on and that the electrode must not contact the speculum while the current is on; otherwise, a short will occur and an expensive electrode will be burned out, and, if the speculum is contacted, there is danger not only of burning out the electrode but of shocking the patient, which, while inconsequential, may be momentarily disagreeable.

A cervix thus treated heals in three to four weeks and there is no more leukorrhea. Incidently, if there is a cervicitis immediately around the canal, which does not extend more than one and one-half

to two c.m. in any direction, it is likely that this will also be cured by this procedure without further treatment. It is well in such a case to describe a circle with the proximal end of the electrode, so as to contact the os and thereby to coagulate the surface ulcer over a greater area. Usually there is a blanching of one c.m. around the circumference of the os. The patient sometimes complains of a uterine colic for a few seconds during the procedure or immediately thereafter. She should be reassured in such an event.

If the laceration is wide and the os is much inflamed and the cervix enlarged, the Hyam's technique may be used to wonderful advantage. For this the cutting current is used. A negative plate is used at some indifferent place on the body. A special electrode of one of the sizes and designs available is inserted into the cervical canal. The cutting current is switched on and at the same moment the electrode is quickly rotated within the canal in such a way as to cone it out. With this the mucosa is removed with as much of the adjacent wall as may seem desirable. The walls are automatically coagulated enough to stop the bleeding.

This procedure is best done under anesthesia, since this method is not an ordinary office procedure, and is most often associated with some other surgery.

It is better to give either of the two treatments (Cherry or Hyam's) following a menstrual period.

Douches do not cure cervical lesions and the attendant symptomatic leukorrhea; neither do topical applications. The best that can be said for the former is that they temporarily cleanse away some of the discharge.

Insufflated dusting powder is helpful at times in reducing temporarily the profuse foul discharges. Zeroform, 1 part, and boric acid, 3 parts, or kaolin and sodium bicarbonate, equal parts. Alcaroid powder is also useful.

Polypi may be treated through a speculum. The cervix is grasped by a tenaculum or by two tenaculi and drawn down. The base of the polyp may be destroyed with a small cautery at cherry red heat, taking care to protect the walls of the cervix other than the area being treated. The positive pole of a coagulating current of low intensity may be inserted in the base of the pedicle and the current applied for a few seconds. It may be looped off with a cutting current (endotherm).

Myoma must be treated by a method which is determined upon by the location, size of growth, age of patient, and possibly other factors. It is essentially a surgical procedure. A small nodule may be coagulated, if available to such a procedure, or it may be removed by the cutting current.

Carcinoma of the cervix is best treated with radium, which has largely superseded surgery, because the number of cures resulting from its use is conceded to be greater than from surgery. There is practically no immediate mortality from radium, whereas surgery, in the hands of masters, showed an immediate mortality of 10 to 18 per cent, with slightly fewer five-year cures.

The use of radium must be in the hands of those who have a reasonable working knowledge and to whom an adequate amount of radium is available. As before stated, those that are early diagnosed and adequately treated are largely responsible for the five-year cures. Some, however, who appear to be hopeless are cured. Every woman suffering with cancer of the cervix should be given the benefit of whatever possible good we are able to offer. In order not to bring treatment into disrepute, the referring physician, the relatives, and possibly the patient, should be acquainted with the picture that is presented, and made to understand that we are not too hopeful,—but advanced cases which seem hopeless are sometimes cured; that in the event of unfavorable results, radium is not to be stigmatized.

Chancres and chancroids may be found on the cervix, typical or atypical. Late syphilitic ulcers may also be found on the cervix uteri. I have recently seen one that made me quite unhappy. It occurred in a woman whom I had treated for cancer of the cervix two years previously and who had gotten a symptomatic and apparent cure. She appeared with an ulcer on the cervix and portio vaginae which grew larger and showed no response to treatment. In the meantime her husband appeared complaining of hoarseness. He gave, upon questioning, a history of a chancre three months previously. He had a 4 plus Wassermann; so did his wife (who had been previously negative). She was given treatment, the ulcer healed, and she is now symptomatically cured of cancer and syphilis.

CONCLUSIONS

1. All simple lesions of the cervix should be treated and cured; this is now possible.
2. Untreated lesions tend to become cancerous.

3. Leukorrhea is a symptom of some lesion and is curable.

4. Bleeding out of time always has an answer; bleeding in middle life and thereafter should suggest the possibility of cancer, and should be so regarded till it is ruled out.

5. Excessive bleeding at a regular menstrual period, spotting, staining, and metrorrhagia or any bleeding after the menopause, is a danger signal.

6. To attribute bleeding to the "change of life" and to withhold a careful investigation is unjustifiable negligence.

7. Early cancer does not warn of its presence with pain.

8. If pain were an early symptom of cancer the death-rate would be extremely low, for pain urges patients to be treated.

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CARCINOMA OF THE UTERUS.*

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Although known for years, carcinoma of the uterus still remains one of the major problems confronting the medical profession. The frequency of occurrence, the appalling death rate, the inadequacy of treatment, and particularly the importance of early recognition, justifies a short resumé of its outstanding features.

INCIDENCE

Welch years ago found that cancer of the uterus was one of the most common types of new growth. In a recent address before the 84th annual session of the American Medical Association, Hirst stated that cancer ranks second among the causes of death in America; that the mortality has increased from 63 to 96 per 100,000 or more than 50 per cent in the past seven years; that one of every eight women who reach the age of 35 years will have a cancer; and that of the cancers in women 25.8 per cent are in the genital organs. Of the genital cancers, 80 per cent occur in the cervix and it is generally agreed that cancer of the cervix is about eight to ten times as frequent as cancer of the body of the uterus. It should be emphasized at this point that *cancer arising in the cervix is quite distinct from that of the uterine body, both clinically and from the standpoint of diagnosis, prognosis and treatment.*

ETIOLOGY

The etiology of cancer in general is still unknown, but it is felt that certain predisposing factors, namely, trauma and inflammation, may play some part in the development of cervical cancer. Although lacerations and endocervicitis are the most frequent lesions found in the cervix and are considered by some as precancerous, Gardner states that there is no lesion of the cervix which is a definite precursor of carcinoma. Even though carcinoma does arise usually in a cervix which is lacerated and eroded, only a small percentage of patients with these lesions ultimately develop cervical cancer. Approximately 95 per cent of cervical cancers occur in women who have either been pregnant or who have had some operative manipulation of the cervix, although these factors seem to play no part in the development of carcinoma of the body of the uterus. For years cancer has been considered a disease of the middle and later decades of life, but numerous reports in the literature show that the age limits are quite variable. Glass has recently reported a case of carcinoma of the cervix in a girl of 16 years which was confirmed beyond doubt by clinical, microscopical and necropsy findings. This wide age variation should be emphasized, as no doubt some cases in the past have been improperly managed because cancer was not suspected early enough. It was previously thought that carcinoma of the cervix was less frequent in the colored race, but recent statistics show that the incidence is about equal in both races. Carcinoma of the uterus seems to be slightly more frequent in the white race and among the better classes. Strange as it may seem, carcinoma of the cervix is rarely seen in association with prolapse of the uterus, although ulcers are common in these cases of continual trauma and irritation.

*Read before the South Piedmont Medical Society, at Danville, Va., November 28, 1933.

PATHOLOGICAL HISTOLOGY

Cancers of the cervix may be divided into two types: (1) *Everting* or *cauliflower-like* growths, and (2) *Inverting* or *ulcerating* growths. The former usually arises from the vaginal portion of the cervix, while the inverting type usually springs from the region of the cervical canal, although there may be an overlapping by extension from the original site. Histologically, the cervical cancers are classified into: (1) *Squamous-cell carcinoma* or *epithelioma*, and (2) *Adenocarcinoma*, the former being much more common.

The classical picture of carcinoma of the vaginal portion is a papillomatous, cauliflower-like growth of pale pink, necrotic tissue which is very friable and bleeds easily on any manipulation. This lesion may vary from one of a centimeter in size to a large fungating, foul and necrotic mass filling the entire vaginal vault. The necrotic tissue frequently sloughs away, leaving a crater-like ulcer with a cartilaginous, indurated border. To be contrasted with this picture is the early stage in which there may be one or more small nodules in the cervix which are merely quite firm and indurated, with no ulceration or bleeding. This stage is usually diagnosed by the pathologist after a trachelorrhaphy or biopsy is done, but it is, after all, the stage par excellence in which the diagnosis of carcinoma of the cervix should be made in order that success in treatment be realized. Because of its incipient nature and rapid growth, it is essential that a thorough vaginal examination and biopsy be done in any case in which abnormal bleeding, persistent or increasing leucorrhea, or suspicious local evidence might indicate the presence of an early malignancy. It is wise to give all patients the benefit of both a manual and speculum examination rather than the continuation of expectant or conservative treatment without an adequate gynecological examination. We have seen patients thus treated over a long period of time for abnormal bleeding without an examination having been made, and in whom advanced carcinoma was found when first seen in the clinic. I feel sure that routine pelvic examination of all female patients, regardless of the primary symptom or complaint, would greatly enhance the battle against uterine cancer.

The usual picture of carcinoma of the body of the uterus is that of a more or less localized polypoid thickening of the endometrium, of a dead white or ivory color, which, on cut section, presents a rather sharp contrast to the surrounding uterine wall. The surface of these growths is usually irregular or nodular or presents a papillomatous, tree-like appearance. The tumor may take the form of an isolated polyp or multiple polyps, which may be either sessile or pedunculated. The distinct pale and necrotic tissue and the irregular surface of these carcinomatous polyps offer a contrast to the smooth surface and softer tissue of the benign uterine polyps, which show no invasion of the uterine wall. The uterus may enlarge to several times normal size in extensive adenocarcinomatous growths, but in the early stages show no enlargement or other palpable changes.

Microscopically, the appearance of cervical cancer depends upon the type of cancer present, but the usual neoplastic characteristics of lawless growth are prominent features. In the squamous-cell carcinoma or epithelioma, three different cell types are found: the spinal cell, the transitional cell, and the fat spindle cell, corresponding to the cells of the three layers of stratified squamous epithelium. Either of these cells might be the predominant type present in any given cancer. Variation in size and shape of the cells, intense staining of nuclei and mitotic figures are seen. Giant cells with multilobed nuclei and the so-called "pearly bodies" are common. Invasion and rupture of the basement membrane by the cancerous cells is seen and is a very important differential point. Martzloff, after intensive study of these growths, concludes that "the histo-morphology of the predominant type of cell in epidermoid cancer of the cervix is important in that it indicates the relative malignancy of a given tumor." In his study, the spinal cell type proved to be the least malignant, the transitional type next in order, and those in which the spindle cell predominated proved to be the most malignant. Adenocarcinoma of the cervix closely resembles the second group in the degree of malignancy. This comparison closely parallels the well-known grading of malignancy on the appearance of the tumor cells, as proposed by Broders, of the Mayo Clinic.

The microscopical appearance of adenocarcinoma, both of the cervix and of the body of the uterus, is that of a wild, rapidly growing, malignant gland tumor. The cervical or endometrial glands are ir-

regular or tortuous, and there is seen growing into their lumens, proliferations or teat-like projections of the glandular mucosa. These papillary growths tend to maintain gland-like characteristics, but a piling up or reduplication of the cells of the new glands is characteristic. Invasion of the stroma or musculature by the epithelial cells is seen, indicating lawless growth. The cells in the new glands show variation in size and shape and staining properties, but tend to be somewhat blunter and stain more deeply than normal cells. Nuclear and mitotic figures are common.

EXTENSION AND INVASION

Cancer of the cervix is characterized by an early extension and invasion of contiguous pelvic structures. The cauliflower or everting type of cervical cancer readily spreads to the vagina, urinary bladder or rectum, whereas it tends to spread to the para-cervical tissues and regional lymph glands relatively late. The inverting or ulcerating type spreads laterally to the paracervical and parametrial tissues and lymph glands earlier, but it may later invade the bladder, vagina or rectum or spread upward to the body of the uterus. It is obvious that this type of cancer is particularly dangerous, as it may progress to an advanced stage before it is recognized. In contrast, the squamous cell carcinoma of the vaginal portion offers a better chance for early detection, due to the bleeding and discharge which accompany the extension of the growth and invasion of the blood vessels, and which often causes the patient to seek medical advice. As involvement of contiguous structures occurs, grave complications may arise from the invasion or compression of the ureters or pelvic blood vessels. Metastases to the thoracic and abdominal organs, particularly the lungs, liver and vertebrae, are not uncommon, as Behney has recently reported an incidence of 33 per cent in his series of 166 necropsies in advanced cervical carcinoma.

In contrast to cervical cancer, metastases from adenocarcinoma of the body of the uterus occur relatively late, the site of such metastases varying with the primary site of growth in the uterine body. Cancer of the fundal portion usually spreads to the lumbar lymph glands, while those in the lower portion of the uterus may metastasize to the iliac and inguinal glands. Involvement of the tubes and ovaries in these cases occurs more often than in cervical cancer. The primary cancer usually spreads by direct invasion of the muscular wall of the uterus and surrounding structures. Because of the early appearance of abnormal bleeding and relatively late metastases, adenocarcinoma of the body of the uterus offers a better chance for early detection and surgical eradication than does cancer of the cervix.

SYMPTOMATOLOGY

Cancer of the cervix is a treacherous disease in that the advent of symptoms which cause the patient to seek medical advice is ofttimes so late that the disease is in an advanced and often hopeless stage when first seen. Because of this incipient nature, it is important that the laity be taught the early symptoms and the importance of early medical attention.

The three cardinal symptoms of cancer of the cervix are *leucorrhea, bleeding* and *pain,* and they usually arise in that order. Leucorrhea is usually the first symptom noted, but because of the great number of women who have a leucorrheal discharge, the patient and the physician may overlook its significance. At first there may be only an increase in amount of the discharge, but it gradually assumes a watery, blood-tinged character, and in the end stages has a very foul and disagreeable odor as necrosis and putrefaction occur.

Abnormal bleeding is the most common and important symptom. The bleeding results from the erosion of capillary blood vessels by the cancer cells and at first may be only slight in amount, usually occurring between menstrual periods. It gradually increases as the disease advances, and the bleeding may become continuous. In the late stages, frank hemorrhage after excessive work, exercise, coitus, or digital examination, is a very important sign. Thus the cauliflower type of cancer arising in the vaginal portion tends to bleed more readily than the infiltrating type and therefore gives earlier warning of its presence. Carcinoma of the body of the uterus may first manifest itself merely as a slight bleeding or "spotting" between periods, as prolongation of the periods, or as bleeding after the menopause. When it occurs before the menopause, the clinical detection is more difficult as the bleeding is apt to appear only as a profuse menstrual flow. Particular attention should be paid to cases of bleeding after the menopause. In any such case, vaginal bleeding is a definite abnormality and should be re-

garded as due to malignancy until proven otherwise. Thus the importance of biopsy and curettage in any patient having abnormal bleeding, in whom the diagnosis is not definitely established, becomes apparent. In many of these cases, a diagnosis cannot otherwise be definitely assured until these procedures have been carried out. In a recent article, Williams classifies the causes of abnormal uterine bleeding under four groups: first, those associated with accidents or diseases of early pregnancy; second, a group of miscellaneous disorders, both pelvic and general; third, tumors of the uterus, and, fourth, functional hemorrhage. I refer you to his interesting article for a concise description of those conditions which produce abnormal uterine bleeding, and from which malignancy of the uterus must be distinguished.

Pain is a late symptom of uterine malignancy, and usually does not appear until the disease has progressed to an advanced stage, involving the pelvic nerves and other pelvic structures. At first mild, it may become continuous and of severe character. Invasion of the urinary bladder may result in dysuria, frequency, or burning pain, and rectal involvement may cause tenesmus and straining.

Of the physical findings, a striking feature in many cases is the excellent physical appearance of the patient, occasionally even in the advanced stages. Anemia, cachexia and fever are frequent findings of the late stages, resulting from absorption, blood loss, and infection. Symptoms of uremia or profound toxemia may be the terminal picture.

The findings on pelvic examination are variable. Abnormal induration in a cervix the seat of scarring and erosion may be the first physical indication of malignant change, as bleeding and gross change in the appearance of the tissue may be absent. Later, one may find a soft, friable tumor mass arising from the vaginal portion of the cervix which bleeds very easily on manipulation, or there may be found a bleeding, necrotic ulcer with an indurated border. In the advanced cases of widespread pelvic carcinosis, pelvic palpation reveals a thickening and fixation of all the pelvic structures, the so-called "frozen pelvis."

In cancer of the uterine body, the physical findings may be neglible, or may reveal only slight uterine enlargement. The uterus may show no enlargement and the adnexa present no change until late in the disease, and in most cases the diagnosis is made by microscopic examination of the endometrial tissue and not by the physical findings.

DIAGNOSIS

The diagnosis of uterine cancer depends upon a *careful history, findings on pelvic examination and inspection,* and particularly on the *microscopic examination of the tissue* removed. If the physician will supply the tissue, the gynecological pathologist will usually have no difficulty in diagnosing uterine cancer, and in many of the early cases, the diagnosis cannot otherwise be definitely established. A differential study to rule out the other causes of uterine bleeding, listed above, should be made in all cases. Biopsy of the cervix is a relatively simple procedure and it may establish the diagnosis at a time when treatment may be of value.

TREATMENT

Prophylaxis is of the utmost importance in the treatment of cervical cancer. Crossen states that we have in the past improved our results so that, instead of losing all of these patients, we are now able to save 20-25 per cent, but here the progress stops. He cites the fact that in a certain group of patients, namely, those in whom the diagnosis is made in the earliest stages, a cure can be obtained in 80-90 per cent, showing conclusively that the present mode of treatment is adequate to effect a cure in this disease, provided it is *recognized* and *treated early enough.* He concludes that our hope for a lower mortality rests largely with the individual physicians and depends upon diligent care, first, in *removal or treatment of chronic irritative lesions of the cervix* in all patients; second, *periodic follow-up examinations* upon patients thus treated; and *pelvic examination of all female patients regardless of their primary complaint.* The other important phase of prophylaxis, namely, the instruction of the public, also rests largely with the individual physicians in their advice to their patients. Norris feels that eradication of the chronic inflammatory lesions of the cervix would seem to be an efficient method in preventing cancer of the cervix. He states that the combined statistics of Pemberton, Graves, Smith and Bland show that among 18,562 patients adequately treated for these predisposing lesions, only fifteen subsequently developed cervical cancer, or, in other words, one in every 1,247 patients. Studied in another way, the same investigators found that among 2,250 cases of cer-

vical cancer, only thirty-three or approximately 1.5 per cent had received adequate prophylactic treatment. These facts certainly seem pertinent in emphasizing prophylaxis in this disease.

Much has been written in recent years regarding the relative merits of radium, X-ray, and surgery in the treatment of carcinoma of the cervix. At the present time, it is the concensus of opinion that radiation therapy is the method of choice. According to Hirst, accumulating statistics show a superiority of results from a combination of radium and X-ray, and Williams states that in this country today cancer of the cervix is generally treated by deep pelvic X-ray therapy first, followed by direct radium application to the cancerous area. This plan of treatment is generally followed at the University of Virginia Hospital. The usual regime of treatment is the administration of a series of deep X-ray exposures to the pelvic region, followed in several days by the intracervical application of well screened radium. From 2,400 to 4,000 milligram-hours of radium therapy are given, depending upon the condition of the patient and the extent of the cancerous involvement in the pelvis. In many cases of advanced carcinoma in a patient of poor condition, an attempt at merely giving palliative doses of X-ray for the relief of bleeding or discharge is all that can be done safely. According to Ward, at the Howard A. Kelly Hospital in Baltimore, the above method of inserting radium in the canal is used when the growth is chiefly intracervical, with radon tubes placed over the cervix and the vagina well screened and packed. Fungating and ulcerative growths are treated with radon plaques alone, the dosage varying from 2,500 to 3,500 millicurie-hours. In massive growths filling the vagina, radon seeds are implanted directly into the tissue, and, if parametric involvement complicates the local condition or is recurrent after operation or irradiation, it is treated by implantation. Recently, Schumann, of Philadelphia, gave a preliminary report of a method of applying roentgen rays directly to the affected tissues in cases of advanced carcinoma by means of laparotomy and direct exposure of the pelvic tissues, after screening the abdominal walls with lead sheets. This procedure is carried out under avertin anesthesia in conjunction with intracervical or intrauterine application of radium, and in his three cases no untoward complications arose. The question of whether we are justified to impose the added danger incident to the anesthetic and opening of the abdomen in these patients who have advanced carcinoma is debatable.

Surgery in the treatment of carcinoma of the cervix now has fewer advocates, as almost all the prominent gynecological clinics have deliberately turned from surgery to radium; however, it must not be completely ignored, and should be considered in early cases which are suitable for hysterectomy. The radical hysterectomy is usually done if surgery is adopted, but Gardner states that "if carcinoma has already invaded regional structures a cure cannot be obtained by operative measures." Martzloff found that no patient in his series in whom broad ligament involvement was noted is living after operation; all died of recurrent carcinoma and 90 per cent lived less than one year. The field of surgery is limited in that only those cases which present no invasion of contiguous structures and in which the cervix is movable should be subjected to operation. Hirst concludes that "in the treatment of cervical cancer, the high mortality of the radical operation, the neglible mortality of radium application, the approximate equality of results, the shorter hospitalization, the absence of suffering, the palliation of symptoms, and the fact that radium alone can be considered in advanced cases, have relegated surgery to a subordinate place."

In the treatment of carcinoma of the body of the uterus, excellent results by surgical removal are usually obtained due to the fact that it gives symptoms earlier, grows slower, and invades and metastasizes later. The generally accepted method of treatment is radical surgery as soon as the diagnosis is made. Unfortunately, many of these patients are elderly and obese and are at best poor operative risks. When there is a contraindication to either operation or anesthesia, treatment by X-ray and radium must be substituted. Cures are obtained in from 65-80 per cent of the cases following radical hysterectomy, while results from X-ray and radium in cases too extensive for operation are not gratifying.

General supportive measures, care of the diet and elimination, and control of the anemia are essential. In the late stages, blood transfusions are often necessary to prolong life after severe or continual hemorrhage, and the liberal use of opiates is often necessary to allay the severe pain and continual suffering.

PROGNOSIS

The ultimate prognosis in any case of cancer of the cervix is uncertain, as it is difficult to decide what constitutes a clinical cure. Various criteria have been accepted as indicative of a cure over a period of five years, but in some cases recurrences of the cancer appear many years after eradication or treatment of the primary growth. Hirst states that, in 1927, Heyman collected 5,024 cases from twenty surgical clinics, and 2,512 cases from seventeen radiologic clinics, in which a five-year cure rate of 18 per cent and 16.3 per cent, respectively, was found. He adds that Bowing and Fricke, of the Mayo Clinic, in 1930 reported a 23.8 per cent cure rate in 1,000 cases, while Ward this year reported an absolute cure rate of 24.8 per cent.

The prognosis in carcinoma of the body of the uterus is more hopeful. The results of treatment in these cases are generally conceded to be much better, as in 60 to 85 per cent of these patients a clinical cure is obtained.

Thus it is seen that of four women who come to the physician with a cancer of the cervix, one may survive. In spite of skilful treatment, three of these four patients will die within five years. Improvement in results of treatment in this devastating disease depends upon, at least for the present, first, *early recognition* by biopsy and curettage in suspicious cases, and upon the institution of *prompt treatment* after the diagnosis is made. The question of early diagnosis frequently depends upon the cooperation of the family physician and the pathologist. The physician in general practice can often make a diagnosis at a time when treatment will be the means of saving the life of the patient, as so many of these patients are in a hopeless condition when they first seek relief from the clinics and hospitals.

SUMMARY AND CONCLUSIONS

1. A brief review of the characteristic features of carcinoma of the uterus is given.

2. Carcinoma of the cervix should be distinguished from carcinoma of the body of the uterus, as the two processes are quite distinct, both clinically and histologically, and in their response to the present methods of treatment.

3. The present concensus of opinion is that radiation therapy is the most efficacious in the treatment of carcinoma of the cervix, whereas surgical removal still stands as the procedure of choice for carcinoma of the uterine body.

4. The mortality rate from this disease is still high and better results from treatment can only be realized, at least for the present, by earlier detection and treatment.

5. The physician in general practice can do much to improve the present discouraging results by exerting every effort to make an early diagnosis and urge prompt treatment.

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Allied Arts Building.

PHASICITY OF FUNCTION.

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I have coined a word and hope I have not violated the maxims of the etymologist in the venture. It looks and sounds all right to me; and certainly the term fills a verbal hiatus. And the theme would fill, if properly expounded, I believe, a clinical hiatus. For, if my observation has not been widely at fault, it cannot be unjust to say that too much of our clinical thinking and acting has been in terms

of the stationary rather than in terms of the incessant rhythmic change—the physiological ebb and flow, the wave-motion of function—which is organic existence. It is as if we had stopped the moving picture at two or three points on the reel, centered our attention on these few static pictures and forgotten everything that goes before or after or in between. To illustrate: Take the matter of arterial tension—who will doubt that the average physician's mental gallery contains at most three pictures on this subject, one labelled "high blood pressure," one "low blood pressure" and one "normal blood pressure." How many have taken the trouble to examine the reel before and after and in between these three "shots," to see the beginning, the middle and the end of the story, and learn how normal blood-pressure becomes low and high and back again to normal? How many of us stop to wonder, much less to ascertain, as we read our sphygmomanometer, what part of the physiological wave, what phase of function, our patient is traversing, and in so failing, fail to grip the one essential—whither is our patient headed? If his tension is abnormally high or low, it is true we have discovered that he is headed off the road of normality—but in what direction? It is well enough to know that he is "on his way," but it is crucial to also know "where he's going." We say a person has low blood-pressure—we'll give him something to raise it. The real problem—although the patient will probably never realize it—is not quite so easy. A low pressure may be the first phase in cardio-vascular fatigue, in which the next phase is a rising pressure. And if we apply measures to raise the tension of this patient (other than the physiological one of rest) we are merely aiding and abetting the forces of disease instead of combating them.

Another illustration: the leucocyte count. Everyone will agree, I think, if he stops a moment to consider, that it is much more important to know whether the leucocytes are increasing or decreasing in number than to know that they are a certain amount below or above a certain average figure that we call "normal." In other words, we want to know in what phase of the leucocytic tide our patient is—in what direction the process is moving—not that he's "on his way," but "where he's going." All this, of course, involves not only knowing whether a count is rising or falling, but knowing the significance of the change. A falling count *per se* may mean that the patient is convalescing from an infection, or is succumbing to that infection: a rising count *per se* may have the same two extremes of significance.

A third illustration: The antibody titer. If a person is subject to boils or arthritis or what not, are we not too prone to jump to the conclusion that his antibodies need stimulating—by vaccines or serums or non-specific antigens? Do we often stop to consider that it may be his antibodies are *exhausted*—over-stimulated, in fact, rather than under-stimulated? And what he may need is restoration of antibody rather than the stimulation of antibody. Stimulation without the supplying of antibody material (state) would in this case aggravate the condition rather than ameliorate it.

And so the illustrations might be multiplied indefinitely. An especially interesting one to me is that of the blood-platelet tide. But of that, more anon perhaps. Let me conclude by repeating for my own edification and I would hope for that of some readers: Bodily functions are phasic, fluid, ever-changing reactions. We must estimate them in non-static terms if we would attain accurate clinical insight.

THE LATEST DEVELOPMENT IN THE TREATMENT OF FRACTURED SPINES.*

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Of twenty European Orthopaedic clinics recently visited, Dr. Lorenz Bohler's traumatic clinic in Vienna remains the most impressive. The systematic and precise way in which he treats fractures and the quality of his end results revealed to me a new era in traumatic surgery. Dr. Bohler treats fractures by accurate reduction, immobilization only

*Case demonstrated before the Section on Bone and Joints, Southern Medical Association, Richmond, Virginia, November 18, 1933.

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of the area involved, and immediate physiological function—thus, old methods of treating fractures where "immobilization of the joint above and below the injured area with prolonged rest" was the keynote to all treatment, have been replaced.

What the term "a broken back" meant to the injured, and the outline of treatment for such by the doctor, have changed from what used to be slight or no reduction of the compressed vertebrae, immobilization in plaster jacket or shell for three to four months, and a convalescence over a period of twelve to eighteen months, to that regime which I shall outline for you and under which this patient was treated. From the impression years ago that "a broken back" necessitated not only prolonged hospitalization, permanent deformity, and probably partial permanent disability, we arrive now at perhaps a more scientific approach to the handling of these cases. Up until the past five years the interpretation of this expression, not only to the layman but to the doctor, meant the patient's incapacity for work and a permanent deformity.

Most of these erroneous beliefs about "broken backs" have passed with the progress of medical science and there is now a new era in the treatment of this condition.

The first step, treating the patient's mental attitude by assuring the patient, although he has a broken back, if he will cooperate, he will be as good as he ever was, and in many respects stronger and more able to work than before, is the most vital part of our present treatment. To further assure the patient that although his spine is fractured, he will not have a permanent deformity, that he will not be an invalid and that he will go back to work a well man, gives encouragement for the cooperation which is so necessary in the performance of the daily treatment which the pictures illustrate.



Fig. 1.—A. Roentgen ray examination of the spine taken October 9, 1933, before reduction. Note the compression of the first lumbar vertebra and the anterior dislocation of the twelfth dorsal on the first lumbar.



Fig. 1.—B. Roentgen ray examination of the twelfth dorsal and first lumbar vertebrae following reduction after hyperextension.

The actual reduction of the compressed fractured vertebrae is accomplished by hyperextension of the spinal column. Local or general anesthetic may be used.

It was Dr. A. W. Rogers, of Massachusetts General Hospital, who proved that hyperextension of the spinal column could be carried just so far, because, through experimentation, he found that the anterior longitudinal ligament that runs along the anterior surface of the bodies of the vertebrae and is at-



Fig. 2.—A. Schematic drawing showing the compressed vertebrae before and after hyperextension of the spine and the anterior spinous ligament serving as a checkrein to limit the degree of hyperextension possible.



Fig. 2.—B. Method of hyperextension showing the position of the patient while the spine is being reduced and the plaster jacket applied.



Fig. 3.—A. A feat this patient could do only once or twice at a time in the beginning was gradually increased until it was done with ease twenty times daily.



Fig. 3.—B. Exercising the rhomboid, trapezius, latissimus dorsi. All the deep muscles of the back come into play when this exercise is performed.



Fig. 4.—A. Exercises started on the fifteenth day. Extension of back on thighs, exercising the erector spinae muscles.



Fig. 4.—B. From once daily this exercise was repeated and gradually increased until it could be easily repeated twenty-five times daily.



Fig. 5.—A. Weights starting with fifteen pounds were carried and gradually increased up to sixty pounds in each bundle, as is shown in this picture. Note the cast, how it fits well up over the sternum and down over the hips.



Fig. 5.—B. Weights starting with fifteen pounds and gradually increased up to seventy-five pounds were carried on the head. This not only exercises all the muscles of the back but puts weights on the spine—a desirable factor in treating such cases.

tached at the upper and lower lip of each vertebra, has a tensile strength equal to that of the tendo-achilles, and that when the spinal column is hyperextended, this anterior spinus ligament serves as a checkrein to the degree of hyperextension possible. With pull on each lip of the bodies of the vertebrae, restoration of the height of the vertebrae is obtained. A non-padded plaster jacket is applied while the patient is hyperextended, fitting well up on the sternum and down over the pubic bone. The

secret of the subsequent treatment depends on proficient immobilization by means of this jacket.

Dr. A. G. Davis, of Erie, Pennsylvania, was the physician who reviewed this method and advocated that the time of recumbency could be reduced to two months. Dr. Bohler observing these procedures at the Massachusetts General Hospital and at the American Orthopaedic Association when it met in Boston in 1930, took home with him to Vienna the principles of reduction. There he added the finishing touch of immediate active motion following reduction of the fracture or fracture dislocation, whichever the case may be.

This article describes the end result of a fracture dislocation of the lumbar vertebrae with paralysis in a patient whom I had the opportunity of treating immediately after my return from Europe, just six months ago.

Mr. C. H., age 27 years, while walking in his sleep on the night of October 8, 1933, fell from his bedroom window to the driveway below, sustaining an injury to his spine. Physical examination revealed a deformity in the lower dorsal and upper lumbar spine and partial paralysis of both legs. X-ray examination showed a compressed fracture of the body of the twelfth dorsal with a forward dislocation of the twelfth dorsal on the first lumbar vertebra.



Fig. 6.—Flexion of the extended thighs on the abdomen was another exercise started once daily and increased until the patient would carry out this procedure thirty times. The psoas major and minor, along wth the rectus abdominis muscles, are the chief ones concerned here. So great was the development of the abdominal muscles, one could stand on the contracted abdominal wall.



Fig. 7.—Roentgen ray examination of the spine three months after treatment and after the plaster jacket had been removed. Note the preservation of the height of the vertebrae and the intervertebral space.

On October 10th the patient was given gas oxygen anesthesia and by the method described above, the spine was hyperextended. While the patient was in this position, a non-padded plaster jacket was applied, fitting well up over the sternum and moulded close about the hips.

When there is no abnormal nerve manifestation, the patient is got up on his feet on the second to fourth day and made to exercise immediately. In this particular case there was paralysis of the entire right leg from knee down and some weakness of the right gluteal group; on the left side the dorsal group of muscles in the foot and leg showed nerve paralysis. For this reason, this patient under treatment was kept recumbent from October 15th, the date of reduction, until November 1st, when he was allowed to get up. During this in-

terval, rapid recovery of nerve involved muscles was seen.

Exercise by squatting, pulling up on rings, flexion of extended legs on abdomen and extension of back on thighs was started. Weights of fifteen pounds were carried on the head and increased gradually until sixty pounds were carried. With this daily routine the patient progressed to the extent that he was much stronger than he was before the accident.

The key to the success of the new treatment of all fractures is active motion of all muscles about the injured part. Active motion is started immediately instead of putting the part at rest, allowing the muscles to dwindle away, muscle tone to diminish, stagnation of circulation to occur. This serves two important physiological functions.

We know that muscles serve as the heart to the venous system; therefore, active motion maintains muscle tone, which, when lost, is as debilitating as the fracture itself, but when maintained, through activity, supplies the fractured area with more normal blood supply, a quicker healing of the injured part, and a reduction to a minimum of the post healing disability.

This patient, whose case this article describes, returned to work February 1st, stronger than he was before his accident. He has since this time worked as a traveling salesman, driving many miles daily without pain or discomfort. He was given a thorough physical examination on March 26th, at which time his back was without limitation of motion in any direction. The spinous process of the twelfth dorsal vertebra could be palpated slightly more prominently than the adjacent ones, a condition that was present when the cast was first removed and accounted for by the slight narrowing of the joint space between the bodies of the twelfth dorsal and first lumbar vertebrae.

Five cases of compressed fractures of the bodies of the vertebrae have been treated under my observation within the past six months. All of these cases have completely recovered under the regime outlined above and are back at their various occupations without a mechanical support and without physical deformity, limitation of motion, pain or discomfort.

It is no longer necessary that the term "broken back" should carry with it negative connotations so



Fig. 8—A. With sixty pounds in each hand this shows the patient's muscular development after three months of exercises.



Fig. 8.—B. Muscular development of the back muscles to the extent that when the plaster jacket is removed no form of support is necessary to hold the spine erect.

prevalent in the end results of such cases treated five or ten years ago. Reduction by hyperextension of the spine, depending on the anterior longitudinal ligament to serve as a checkrein for the degree of hyperextension possible, originated with Rogers and Davis and is generally known today.

Active motion of the muscles about the fractured area, not only in cases of fractured vertebrae, but in all types of fractures, hastens healing by a more normal physiological supply of blood to the part, increases muscle tone and thereby eliminates any mechanical support following healing of the fracture.

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THE NON-OPERATIVE TREATMENT OF HEMORRHOIDS.*

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In selecting a title for my paper, I am not unmindful of the fact that any mechanical procedure for relief of hemorrhoids *is* in reality an operative procedure, yet this is an ambulatory treatment that appeals to the great mass of people who abhor the "knife" and operating rooms. Perhaps "The Injection Treatment of Hemorrhoids" would have been a more suitable caption. I shall attempt to give you as comprehensive an outline of the subject as time allows on this program.

This form of treatment is becoming increasingly more popular, and justly so, due to its greater margin of safety, no loss of time from work, no hospitalization, no anesthetic, and less financial outlay. In some localities one hears strong opposition to the injection treatment, but in practically all cases it is not the treatment that is at fault, but it is due to the fact that inexperienced men have attempted to inject all types of hemorrhoids. They have treated thrombosed, ulcerated, and infected piles, and have not used the proper sclerosing solutions. Strictest attention to every detail and utmost care must be exercised if one is to avoid disaster. Let me here emphasize the fact that there is but one type of hemorrhoid that is suitable for non-surgical treatment, and that is the internal hemorrhoid, uncomplicated by cryptitis, infection, thrombosis, ulceration, fissure, fistula, or external hemorrhoids. If these complications exist, surgical operation is the treatment of choice.

In a discussion of this subject it is well to review briefly the anatomy and physiology of the lower rectum and anus. I must apologize for the time consumed in this review, as all of us are well versed in the anatomical location and landmarks of the

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distal orifice of the gastrointestinal canal, yet there are peculiar anatomical and physiological characteristics which one should understand thoroughly in order to diagnose and treat hemorrhoids satisfactorily.

The pectinate line, or linea dentata is a well defined circumferential ring around the anal canal which marks the point of fusion of the skin from without and the mucous membrane from within the rectum. This serrated line is an important and strategic landmark as it also marks the line of division of the nerve, blood, and lymphatic supply of this region. The part above the pectinate line is supplied by the sympathetic nervous system. This means that the rectal mucosa is without sensory fibers and explains why a malignant growth may progress to an inoperable stage before it is recognized by the patient. Until a carcinoma of the rectum has extended to extra-rectal structures to produce pelvic pain, discomfort in the hips and back, or abdominal pain as a result of obstruction and tenesmus, pain is not manifest. The nerves which supply the cutaneous margin of the anus are derived from the cerebro-spinal system *via* the lower sacral plexus, and have to do with sensory and voluntary motor function. These fibers transmit the painful impulses from sensitive external hemorrhoids.

The vascular structures are also vastly different above and below the pectinate line. We are concerned chiefly with the veins in this discussion. Those above the pectinate line ultimately empty into the portal circulation, while those below the linea dentata empty their contents into the vena cava *via* the middle and inferior hemorrhoidal veins and iliacs. Some anatomists claim that there is no free anastomosis normally between the veins above and below the pectinate line, but undoubtedly there is some connection after hemorrhoids develop.

Above the dentate line the lymphatic channels pass upward beneath the rectal mucosa and empty into the sacral and hypogastric nodes. Below it, the lymphatics drain downward and forward into the inguinal nodes. Thus is explained the direction in which metastasis may be expected in malignant disease, and also the course taken when lymphangitis develops in infected external hemorrhoids.

Etiologic Factors: Reference to some of the older works in surgery reveals practically the same list of factors influencing the production of hemorrhoids as we find in the latest textbooks. Man is said to be the only creature so afflicted. This is thought to be due partially to the erect posture, which produces stasis in the hemorrhoidal veins. These veins are without valves to relieve the back pressure. Excess in eating, constipation, diarrhea, drastic purgatives (phenolphthalein is thought by some to produce a proctitis which favors the formation of hemorrhoids), intra-abdominal tumors, pregnancy, and parturition are well known etiologic factors. Straining at stool and trauma from hard fecal material, foreign bodies, sedentary habits, and constant riding in automobiles are also frequently thought to cause hemorrhoids. One of the most potent factors in the etiology of hemorrhoids is infection. The tiny anal crypts and fissures may easily admit infection into the peri-anal spaces, followed by a low grade painless cellulitis and phlebitis of the hemorrhoidal veins. This results in a weakening of the venous walls, dilatation and incapacity. The muscular walls are replaced by fibrous tissue and a sacculated varicosity, ofttimes containing clots, results.

Diagnosis: It is to be deplored that many physicians are backward about making rectal examinations. Still fewer are not in the habit of making a proctoscopic or sigmoidoscopic examination. Most lesions in or near the rectum are perfectly manifest upon direct examination and most of them are amenable to early treatment properly applied. Most errors here, as elsewhere, are due to failure to examine the patient rather than to ignorance on the part of the examiner, or to the bizarre and complex nature of the ailment. In no other phase of medical practice are there more slovenly and slipshod methods of diagnosis. Too many in our profession are perfectly content to let the patient come in with his or her own self-made diagnosis. The practice of routinely prescribing some proprietary ointment or suppository is pernicious. This frequently palliates the patient or allows an operable condition to progress into an inoperable one. Quite recently I was privileged to examine a lady, who for months had complained of "piles," and for whom some one had prescribed an ointment without so much as even examining her. The first thing I noticed when doing a rectal examination was an annular, indurated growth almost completely encircling the lower rectum and greatly decreasing the lumen of the

bowel. Another patient seen recently had been treated for "prolapsed hemorrhoids" for weeks with various ointments, when he really had latent syphilis with condylomata. These cleared up rapidly following anti-luetic treatment. I mention these two cases merely to emphasize the importance of careful examination and to stress the necessity of being alert to recognize the dangerous non-hemorrhoidal conditions which may masquerade as hemorrhoids.

For all practical conditions, hemorrhoids may be grouped into two classes—internal and external, or a combination of both. The internal type varies from a capillary or nevoid form, which bleed easily, to the larger pedunculated ones which are prone to protrude following defecation. These patients usually give a history of prolonged discomfort, frequently with bleeding at stool and prolapse. Internal hemorrhoids are always covered with mucous membrane in contradistinction to the external ones which are covered with stratified squamous epithelium. The sufferer from external hemorrhoids usually complains of sudden extreme discomfort in the region of the anus following some severe physical straining at hard labor or at stool. It sometimes follows profuse diarrhea. This type of hemorrhoid has a swollen, glistening, bluish color in the acute stage. If unoperated upon, they usually become shriveled up to produce the commonly known "skin tabs" seen about the anus.

Many patients and some physicians describe what they term "itching piles" as though it were a distinct clinical entity. I have never been satisfied that this condition is not due to a peri-anal dermatitis, probably epidermophytosis. Some type of mercurial medication applied locally is very gratifying in these cases.

Treatment: In the so-called conservative treatment of hemorrhoids, obliteration of the offending varicosities is the object striven for. The most popular method at present is by injection of 5 per cent quinine and urea hydrochloride. Some men prefer either the galvanic current or electro-coagulation by means of the high frequency current. This latter method is crude, causes a slough, and appears to me to be very un-surgical. The "chemical current" from a good galvanic generator is the better method. Here a biterminal contact is used, employing the negative electrode in the form of a needle inserted into the submucous tissue of the hemorrhoid. The current used is about eight to fifteen milliamperes for seven to ten minutes with each application. It requires several treatments to each hemorrhoid and is time consuming, requiring about three-quarters of an hour at each seance. The sclerosing action here depends upon a chemical irritation and fibrosis resulting from the liberation of nascent hydrogen gas and sodium hydroxide from the tissue juices.

I have employed both of the electrical methods referred to, but my personal experience makes me prefer the injection method as the superior one, which, if properly carried out, offers the best solution to the internal hemorrhoid problem. The technique requires a reasonable amount of skill and good judgment, both as to selection of cases and the proper amount of sclerosing solution used. If too much is injected you will get a pressure necrosis with sloughing. I understand that one of our fellow townsmen, after visiting a near-by shrine for anal afflictions, received such a complete slough of the peri-anal tissues that he had to spend several weeks in a well-known hospital in a distant city.

Some proctologists prefer a solution of phenol either in glycerine or vegetable oil. The literature contains reports of many cases of rectal stricture as a result of the injection of this solution. There is always a possibility of getting it into a vein, and from this standpoint it does not appear as desirable as less toxic solutions such as the quinine and urea hydrochloride which was introduced by Dr. E. H. Terrell, of Richmond, Va., in 1913. This solution should not be used where the patient has an idiosyncrasy to quinine. The *modus operandi* of the quinine and urea hydrochloride in destroying hemorrhoids has been carefully worked out. There is set up immediately a chemical phlebitis within and around the dilated vein. After a short time there is perivascular lymphocytic infiltration and formation of a thrombus within the lumen of the vein. At the end of twenty-four hours there is marked infiltration about the vein, simulating a beginning abscess. Before this stage the patient notices a feeling of fulness for a short time within the rectum, as though he wanted to defecate. This should be explained to him at the time of the treatment. Gradually there is a recession of the tumor-like mass and organization takes place, so that after several weeks nothing remains but a thickened ridge in the rectum to mark the site of the former hemorrhoid. This scar tissue is later absorbed and the mucosa regains its normal appearance.

Where the patient has multiple hemorrhoids to be injected, it is best to keep a written record with date and location of the ones treated. If the same hemorrhoid is re-injected after a few days, it may produce sloughing. I feel that best results are attained where the cases are treated leisurely at five to seven day intervals. In the beginning it is very essential to explain the entire procedure to the patient and get his full cooperation. He should be told that the treatment is almost one hundred per cent effective when properly carried out, provided he will cooperate and continue until he is discharged.

The adverse reports in the literature and criticisms of the injection method are due to several factors, namely: inefficient treatment, improper selection of cases and solutions, and insufficient treatment due to the failure of the patient to remain under the physician's care until he is cured. The majority of patients whom I have treated for hemorrhoids have received symptomatic relief almost without exception following the first or second treatment. Their bleeding and protrusion have been relieved and they stop treatment before adequate treatment was received. These cases will undoubtedly have further trouble, and some will say that the treatment was a failure. Had they continued treatment, they would probably have secured permanent relief.

CONCLUSIONS

1. Hemorrhoids still head the list of anal afflictions and cause untold and unnecessary pain and suffering.

2. Approximately 50 per cent of all hemorrhoids are amenable to office treatment.

3. Procrastination on the part of patient and doctor in delaying examination frequently permits malignancies and other progressive pathological conditions masquerading as hemorrhoids to go unrecognized until possibility of cure is remote.

4. The main criticism against injection treatment of hemorrhoids should be directed toward the inexperienced operator and not to the type of treatment.

5. External hemorrhoids should be treated surgically, while internal hemorrhoids, due to their lack of sensory nerves, can be injected painlessly, safely, and efficiently.

DIVISION OF PLEURAL ADHESIONS IN THE PNEUMOTHORAX TREATMENT OF PULMONARY TUBERCULOSIS.*

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The ultimate favorable outcome in pneumothorax cases depends upon adequate collapse of the lung. This collapse is necessary to provide sufficient functional rest in order to render the lung no longer a source of toxemia, and to free the sputum of tubercle bacilli.

Adhesions between the lung and chest wall cause more failures in pneumothorax therapy than any other complication. When adhesions between the visceral and parietal pleurae prevent collapse of the tuberculous areas, it may be necessary to sever the phrenic nerve to permit relaxation of the diaphragm and give pressure from below. If this is inadequate a complete thoracoplasty may have to be done with its resultant permanent collapse.

An attempt to avoid this radical, but often necessary operation, has induced some phthisiologists to increase the intrapleural pressure to dangerously high levels. This is done in the hope that the adhesions can be stretched and the collapse improved. The employment of high pressure is hazardous, for it may cause the rupture of an adhesion with consequent tearing of a cavity wall or of lung parenchyma resulting in spontaneous pneumothorax, or an empyema, or both. Sauerbruch[1] reports that out of seventy-three cases of cavity rupture, fifty-seven were due to such attempts to stretch adhesions. Of these fifty-seven cases forty-three died during the first week and six later, a mortality of 86 per cent. This method has been largely discarded.

A pneumothorax that is compromised by adhesions is often allowed to be continued indefinitely, either

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in the vain hope that the patient might improve, or because no alternative other than a radical operation can be offered the patient. Such a prolonged ineffective collapse may give to the patient and physician in charge a false sense of security. Actually the disease may extend to the opposite lung, larynx or gastro-intestinal tract. When this extension is recognized, the patient may then be too far advanced to take advantage of other forms of collapse.

In reviewing 850 cases of pneumothorax, Matson[2] found that of those having a good collapse with no adhesions, 48 per cent were clinically well, 20 per cent were arrested, and 21 per cent were dead. When the collapse was partial, being interfered with by adhesions, only 13 per cent were clinically well, 13 per cent were arrested and 50 per cent were dead.

In an attempt to improve the efficacy of artificial pneumothorax in the presence of adhesions, without resorting to the more radical or dangerous procedures already mentioned, the method of division of adhesions under direct vision and in the closed chest was devised. The present paper is a discussion of this alternative procedure, the so-called closed internal pneumolysis. In principle it consists of visualization of the adhesions through the thoracoscope, an instrument carrying lenses and a light which is introduced into the chest cavity through a small intercostal puncture. The adhesions may then be divided by the application of the cautery or high-frequency current.

Matson,[3] observing a large series of cases suitable for pneumothorax, found that only 40 per cent gave a satisfactory pneumothorax without adhesions; 40 per cent gave a partial pneumothorax with adhesions and the remaining 20 per cent had no free pleural space. He then reviewed ninety-one cases that had died and found that 40 per cent would have been suitable for the division of adhesions. He felt that perhaps half of those dead could have been saved by cutting the adhesions.

PATHOLOGY. The tuberculous process in the lung when close to the periphery produces an inflammatory reaction in the visceral pleura. This is expressed by a fibrinous exudate causing adhesion between the visceral and parietal layers of the pleura. In time the exudate becomes organized and fibrous and appears as a typical adhesion. Therefore, the adhesions are usually directly over cavities or over heavily infiltrated areas of lung tissue; exactly the areas that are most in need of collapse. Adhesions are most frequently attached to the upper lobe, where tuberculous lesions are most abundant.

Adhesions usually exist before the institution of pneumothorax but may form after treatment has begun under a pleural effusion in the lower chest. They then pull the lung out along the diaphragm and fix it to the chest wall, frequently causing severe cardiac displacement. The adhesions may then slowly form from below upward and gradually obliterate a satisfactory pneumothorax.

The pleura covering the adhesions is derived from both visceral and parietal pleurae. The blood supply enters as collaterals from the intercostal vessels. Sensory nerve fibers supply the parietal pleura.

TYPES OF ADHESIONS. Most adhesions fall into one of the following classifications:

1. String-like and thin band adhesions with neither end broadened. Because of the small pleural areas involved, it is supposed that these form shortly before the institution of pneumothorax. They are quite elastic and are easily cut, but play little part in preventing collapse of the lung.

2. Bands or cords with broadening at the thoracic end. These are older adhesions that have become fibrotic. Their shape is due to the pulling out of the parietal pleura in a tent-like fashion. The therapeutic effect is good after section of this type. Strings and bands of these two types comprise about 60 per cent of adhesions.

3. Bands or cords with conical pulmonary insertion. These are of long standing and dense. As a consequence of disease the lung has little elasticity and is drawn out into the adhesion. It may be prolonged an incredible distance. A cavity may be pulled out into an adhesion even of pencil thickness. Most empyema complicating this operation results from injury to the lung in this type of adhesion but the therapeutic effect of dividing such adhesions is excellent.

4. Bands and cords of hour glass shape (both ends broadened). Many important adhesions belong in this class. The danger in cutting these is somewhat less than those of type three, in that the possibility of accident is evident, and greater caution is used in their division than those in type three. Nearly 75 per cent of the attackable adhesions contain lung tissue.

Prolonged pneumothorax alters the form and

structure of adhesions. Weaker ones rupture, many larger ones stretch and the relatively loose connective tissue becomes organized and dense.

DIAGNOSIS. The diagnosis and localization of adhesions depends upon the X-ray. They may be seen under the fluoroscope, but for accurate information regarding the number, size, shape, direction and points of attachment of the adhesions, good stereoscopic plates are an absolute essential. Even with this aid, it is almost axiomatic that the impression given by the X-ray is always different from the actual appearance of the adhesions when seen in the chest. For example, adhesions that appear



Fig. 1.—A. Large multilocular cavity in left upper lobe held open by several large adhesions. Patient running fever, sputum heavily positive.



Fig. 1.—B. After cutting adhesions. Intrapleural pressure exactly the same as in A, but cavity is closed, cough and sputum entirely gone, temperature normal.

to be string-like in the X-ray are often seen to be broad bands with thickening at each free border, when viewed through the thoracoscope. Adhesions are often found in the chest that do not appear on the X-ray plate. It is therefore not possible to predict with certainty the suitability of adhesions for cutting until thoracoscopy is done. In some instances, cases that seem unsuitable for division of adhesions when the X-rays are studied, are found suitable and a satisfactory collapse may be obtained when the adhesions are examined under direct vision.

In some clinics all pneumothorax cases are examined by means of the thoracoscope. This is probably unnecessary but shows the safety of the precedures.

Walls of large cavities sometimes appear in the X-rays as adhesions. Careful comparison with old films made before the institution of pneumothorax is necessary to avoid this error. If there is still uncertainty as to the accurate diagnosis of the adhesions, lipiodol may be put into the pleural space and the patient viewed from different angles under the fluoroscope.

The operator must have a clear idea of the location and direction of the adhesions in order to insert the instrument at a point which will give the best possible approach to the greatest number of adhesions. The intercostal spaces in the anterior chest are wider than posteriorly. The muscles in the interscapular regions are thick and interfere with easy manipulation of the instrument. In general, therefore, if the position of the adhesions permit, the anterior or axillary approach is preferred.

INDICATIONS. Treatment with pneumothorax for several months may be necessary to determine the degree of collapse obtainable in any particular case. The further maintenance of an unsatisfactory collapse is usually not justifiable because of the danger of extension of the disease, and for economic

reasons. The division of adhesions to convert the partial collapse into a satisfactory one must then be considered.

The clinical indications which make the consideration of pneumolysis urgent, in addition to the failure of the pneumothorax patient to improve satisfactorily are the following:

1. When the relatively high pressure necessary to produce even partial collapse and to keep the patient even partially afebrile causes shifting of the mediastinum and embarrassment of the opposite lung.

2. When with a fixed mediastinum the pressure results in severe dyspnoea and irritating cough.

3. When the pressure causes formation of considerable fluid.

4. When the tension on adhesions causes pleural pain.

5. When the pressure forces down the diaphragm giving rise to gastrointestinal symptoms (occurs especially on left side). Most of these symptoms are due, of course, to the physician's desire to produce a satisfactory collapse, even in the presence of adhesions, resulting in his use of relatively high intrapleural pressure.

Adhesions which are holding cavities open or preventing the collapse of heavily infiltrated portions of the lung should always be considered for division. It must be recognized that adhesions not only prevent the proper collapse of the involved lung, but as the adhesions become older and the scar tissue contracts, they may drag the lung outward to the chest wall. This contracture of the adhesion may progress in spite of all the efforts of the physician to prevent it. It can only be avoided by division of the adhesions. Various observers estimate that almost half (Matson—45 per cent) of all unsatisfactory pneumothorax cases are suitable for division of adhesions.

CONTRA-INDICATIONS. Division of adhesions should not be done during an acute formation of exudate or acute pyothorax. A chronic tuberculous afebrile pyothorax is not a contra-indication *per se,* but if the adhesions are covered with fibrin and purulent debris, it may be difficult or impossible to see enough of the adhesions to make the operation safe.

Tubercles on adhesions do not positively contra-indicate division, but they must be avoided. Consideration of the possible presence of microscopic tubercles is necessary before cutting in the presence of many visible tubercles.

Extremely dense and short adhesions holding the lung tightly against the chest wall are unsuited for cauterization. The great majority of adhesions that are suitable for division are in the postero-lateral portion of the pleural cavity with peripheral attachment somewhere between the second and fourth ribs. Apical adhesions are often thick, short and difficult to reach, besides being in close proximity to the brachial plexus and subclavian vessels.

TECHNIQUE. In 1913 Jacobeus described his instrument. It consists of two cannulae, one carrying lens and light, the other a cautery tip. The wire is heated by electric current, thus becoming a galvano-cautery. This was much improved by Unverricht in 1922 and is now known as the Jacobeus-Unverricht instrument. This instrument requires two sites of insertion, and considerable skill is necessary to manipulate the two parts simultaneously. The hot wire has the disadvantage that heat to cherry red may burn too fast and cause serious hemorrhage. Smoke from the burning tissue is very annoying. If a relatively cool tip is used the danger is less but it makes the operation very slow and tedious for both patient and operator. The radiating heat from the cautery is an important factor in post-operative pain and formation of exudate.

In 1929, Davidson[4] described an instrument modeled somewhat like the old Nitze cystoscope—carryng cautery and lens through the same cannula. The electrode is guided in much the same manner that the urethral catheter is guided in the cystoscope. This instrument makes use of the radio-frequency current which cuts by cellular disintegration. By means of electro-coagulation operations can now be done that could not have been attempted by galvano-cautery. There is less pain, the operation can be done more quickly and there are fewer post-operative complications. No heat is involved. Davidson's instrument was used in the series of cases herein reported.

In the pre-operative preparation if any considerable amount of fluid is present, this should be aspirated. The patient should have a refill of gas within twenty-four hours before operation. The maximum permissible tension should be used in order to have a large space in which to work, and to stretch the adhesions to their greatest length and

thinness. Preliminary doses of sodium amytal and morphine are given.

A point on the chest wall previously determined by a study of the stereoscopic films is infiltrated with procaine. An incision about 1 cm. long is made in the skin and the instrument is inserted through the proper intercostal space by means of the trocar which fits through the sheath of the instrument. The room is darkened to afford better view to the operator.

The process of division of adhesions necessitates complete familiarity with the pleural cavity by the operator and perfect orientation with respect to the tissue to be cut and its relation to other intrathoracic structures. The adhesions must be studied for lung tissue, vessels and the presence of tubercles. Diffuse folds are dangerous because they may obscure large vessels or lung tissue. It may be possible to locate the edge of the lung in an adhesion by having the patient cough, or clear his throat. An uncontrolled cough is exceedingly dangerous during cutting around the vena cavae or aorta or other large vessels, though the heated cautery is a much greater menace than the cold tip used in the electrocoagulation method.

The greatest danger lies in hemorrhage, and several serious and even fatal hemorrhages have been reported. The surgeon feels rather helpless with a vessel viciously spurting and no way to control it except through the small instrument. If the lens is obscured by blood he is indeed helpless, unless the patient can be turned so that the direction of spurt will not cover the lens. Open operation may be necessary to control bleeding if severe. This danger can be almost completely obviated by a careful study of the adhesions, and then well directed coagulation before cutting.

Empyema, the next most feared complication is due to injury to lung tissue. This complication is rapidly decreasing since the hot wire is being less used and the knowledge of lung prolongation into adhesions is better understood.

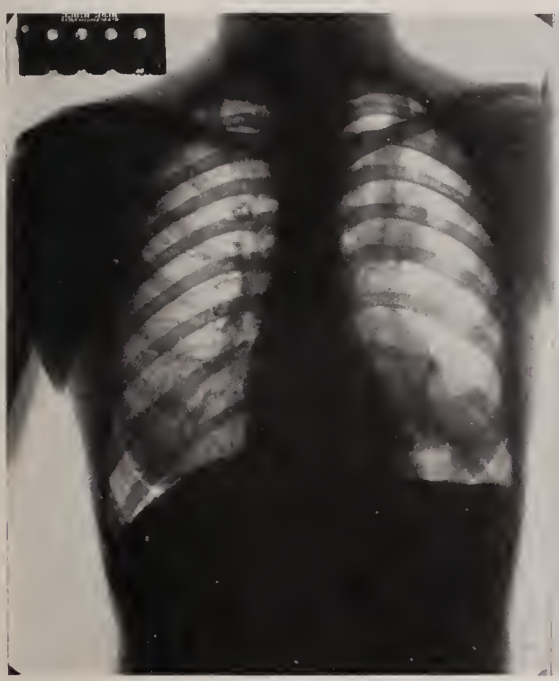


Fig. 2.—A. Infiltration and honey-combing in left upper lobe. Sputum positive, patient not doing well. Upper lobe attached in dome by a V-shaped adhesion.

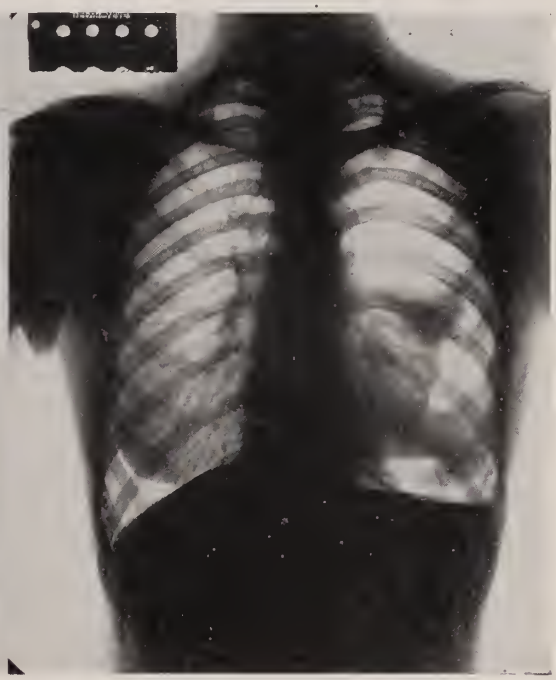


Fig. 2.—B. After cutting adhesions. Some intrapleural pressure as in A. Upper lobe completely closed, sputum negative, patient gaining weight.

RESULTS. The results are relatively immediate and do not include the end results of the pneumothorax. The results depend entirely on the nature of adhesions selected for operation—provided the operator has the necessary skill. Most incomplete results and failures occur in those cases having thick cord-like and diffuse fold type of adhesions. This same group gives rise to most of the complications. The effect on the underlying tuberculosis depends on the completeness of the pneumothorax

and on any complications that may arise from the cutting of adhesions.

The per cent of clinically successful cases varies between 70 per cent and 90 per cent. The complications and mortality both occur in attempts to divide thick, short, cord-like adhesions and extensive diffuse hands. A thoracoplasty offers the patient a better prognosis than an attempt to divide such adhesions.

A harmless serous effusion follows the operation in 10 to 50 per cent of cases, and usually does not require aspiration. Recent series of 130 cases reports one empyema and one tuberculous exudate.

As many as four cauterizations of adhesions have been done on some cases with no unfavorable results.

The experience with the method herein reported includes thirty-four case with no serious complications and no deaths. Four additional patients were examined by means of the thoracoscope but no cutting was done. One of these had such a maze of adhesions, only a few of which were visible on X-ray, that it was impossible to recognize even the lung and operation would have been hazardous. Another patient had scarcely a square inch of either visceral or parietal pleura that was not covered with



Fig. 3.—A. Most of lesion is in lower portion of upper lobe and middle lobe on right side which is impossible to compress by pneumothorax because of large band-like adhesion.



Fig. 3.—B. After cuttng adhesions. Same intrapleural pressure as in A. Lung well compressed. Marked improvement in patient's general appearance, has gained weight, cough and sputum absent.

There were no deaths. There was a former 7 per cent mortality from the empyema following cauterization by Jacobeus-Unverricht instrument. No cases of air embolism have been reported.

Wells[5] reports that in 87 per cent of 141 cases a completely satitsfactory collapse was obtained. Before operation fluid was present in 21 per cent of cases. After operation fluid was present in 24 per cent additional cases. In only two cases out of the entire series was the fluid of any serious consequence. Both of these recovered. There were no hemorrhages and no deaths.

tubercles, and it seemed unwise to attempt to section the thick heavy adhesions that were present. The first ten cases in the series are abstracted briefly to indicate the type of patient selected for this procedure, and the usual post-operative course.

Case I. History No. 93,383, white male, age 21. Began pneumothorax on left side 6/20/30. Adhesions were holding a cavity open. Refills caused pain and sensation of pressure. They were given every eighteen to twenty-one days; 350 c.c. of gas at positive pressure. Sputum repeatedly positive. Some fluid present. On 10/29/31, one large fleshy band

and two string-like adhesions were cut. Some tubercles were noted but none at points of incision.

After operation, pleural pain disappeared, sputum entirely stopped, gained five pounds in weight. Refills now every twenty-eight days; 350 c.c. at negative pressure. Fluid aspirated immediately postoperative. None present now.

Case II. History No. 93,431, white female, age 26. Began pneumothorax on right side 1/24/31. This patient had an incomplete collapse of involved area giving rise to toxic symptoms. Sputum repeatedly positive. Refills every seven to ten days; 400 c.c. at positive pressure. On 10/31/31, two broad irregular bands and two string-like adhesions were cut.

Since operation she has gained two pounds in weight, sputum consistently negative. No fluid either before or after cutting adhesions. Refills now at twenty-one-day intervals; 400 c.c. at positive pressure.

Case III. History No. 93,746, white male, age 34. Began pneumothorax on left side 9/21/29. Gastro-intestinal upsets and pleural pain following gas. Adhesions prevented collapse of involved area and sputum repeatedly positive. Refills every fourteen days; 300-400 c.c. No fluid. On 11/14/31 one string-like adhesion cut. One thick band seen which held lung tissue close to chest wall. An elliptical incision was cut along inferior margin of this adhesion in parietal pleura to allow relaxation of tension on lung.

After operation sputum consistently negative. Weight stationary, trace of fluid for short time; none now. Refills produce no symptoms. Now requires 200 c.c. every twenty-one days.

Case IV. History No. 94,203, white female, age 24. Began pneumothorax on left side 10/26/31. Symptoms, low-grade fever, cough, anorexia, failure to gain weight. Adhesions held open a cavity. Sputum repeatedly positive. Refills of 300 c.c. at positive pressure every three to seven days. On 12/11/31 two bands 4 cms. wide and one string-like adhesion were cut.

After operation toxic symptoms entirely relieved. Gained seventeen pounds in weight. Sputum consistently negative. Refills now 200 c.c. at positive pressure every eighteen days. Fluid present both before and after operation.

Case V. History No. 95,608, white female, age 42. Began pneumothorax on right side 3/10/30. Refills of 250-300 c.c. at positive pressure at seven-day intervals produced marked pressure symptoms, dyspnoea, cough, expectoration, lassitude. Sputum positive. Adhesions hold cavity open, pressure causes mediastinal shifting. On 3/30/32 a large fleshy band which contained lung tissue was partially enucleated from the chest wall. Operation obviously incomplete. Should have another attempt later with approach from different angle. Some fluid present.

After operation symptoms only slightly improved, sputum still positive. Refills now 100 c.c. at positive pressure every seven days.

This patient recently (10/17/32) had another thoracoscopic examination, in the hope that the adhesion might be divided. This was found to be impossible and she should have a partial thoracoplasty to provide the necessary collapse of the cavity.

Case VI. History No. 96,486, white female, age 17. Began pneumothorax on right side 5/30/31. Refills of 450 c.c. at positive pressure every fourteen days. Diseased area incompletely collapsed, general lassitude and progressive loss of weight. Sputum negative after start of pneumothorax. On 4/12/32 a thick cord was found and cut. To this was attached a broad band extending for some distance along the curve of the chest wall. In this band was cut a deep notch as far as it could be reached thereby permitting collapse of the diseased area. After operation there was a general symptomatic improvement. She gained twelve pounds in weight. Refills now 500 c.c. at negative pressure every fourteen days.

Case VII. History No. 98,488, white female, age 24. Began pneumothorax on left side 4/9/32. Sputum negative after 6/1/32. Refills of 400 c.c. at positive pressure every seven to ten days, resulting in pain in shoulder. Some cough, occasional gastro-intestinal upset and anorexia. Patient had marked displacement of mediastinum with embarrassment of opposite lung which was also diseased.

On 7/25/32 a large U-shaped adhesion with a small cord running through the U was divided. The upper portion of the U was also fused with a broad band about 6 cms. wide which was cut, with another narrower band and two string-like adhesions.

After operation cough entirely ceased and general symptoms all disappeared. Gained five pounds

in weight. Trace of fluid following. Refill now 350 c.c. at negative pressure every fourteen days.

Case VIII. History No. 98,752, white female, age 25. Began pneumothorax on left side 5/7/32. Sputum negative. Adhesions hold upper lobe towards apex and prevent adequate collapse. Refills of 300 c.c. at negative pressure every seven days. Appetite poor, failure to gain weight. On 8/11/32 two bands, each about an inch wide and one-eighth inch in thickness, were seen and cut along with a small cord-like adhesion.

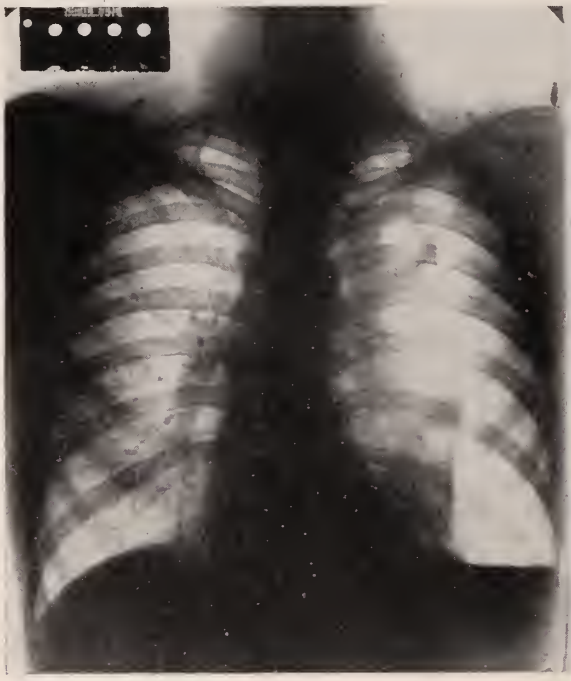


Fig. 4.—A. Large thick walled cavity in left upper lobe held open by a maze of adhesions over the entire dome. Sputum positive.



Fig. 4.—B. After cutting adhesions. Same intrapleural pressure as in A. Lung well compressed, cavity almost closed, sputum negative. Gained 60 pounds in six months after cutting adhesions.

After operation there was little change in symptoms in the three weeks patient remained before transferring to another sanatorium. Weight stationary. Patient obtained marked collapse and should be much improved. Refills of 200 c.c. at negative pressure every ten days.

Case IX. History No. 80,250, white female, age 29. Began pneumothorax on left side 10/8/29. Sputum negative after starting pneumothorax. Refills of 200 c.c. at positive pressure every eighteen days. Patient had pleuropericardial adhesions preventing sufficient pressure to give adequate collapse, and marked dyspnoea. On 8/15/32 several very thick adhesions apparently covered with tubercles were seen in apex but no attempt was made to cut them. One broad band and two string-like adhesions were cut, leaving small strip of band posteriorly which was out of reach.

After operation there was slight general improvement, a trace of fluid was present. Weight stationary. Refills of 200 c.c. at positive pressure given at shorter intervals of seven days to push lung down as much as possible and stretch remaining bit of band.

Case X. History No. 99,114, white male, age 47. Began pneumothorax on left side 6/18/32. Sputum repeatedly positive. Adhesions holding open a large cavity in apex. Refills of 500 c.c. at negative pressure every three to four days. Cough and expectoration, fever and general symptoms of toxemia when pressure was lowered. On 8/27/32 a maze of band-like adhesions covering apex of lung from front to back were carefully studied and all cut except a few small ones on medial side of lung. After operation there was some decrease in general symptoms, and sputum is now negative. Refills of 300 c.c. at negative pressure every seven days. Slight amount of fluid present.

The following summary was compiled May 1, 1933:

Earliest Case, October 1, 1931.
Last Case Reported, February 1, 1933.

Number of Cases Operated	34
Exploration Without Operation	4
Total	38
Number of Cases Included in Summary	27
Number of Cases Too Recently Done to Report	7
Total	34
Technically Successful 23 Cases	(85.1%)

ANALYSIS OF CLINICAL RESULTS

Based on Fever, Cough, Sputum, Weight and Efficiency of Pneumothorax.

Improved	24 Cases	(88.8%)
Unchanged	3 Cases	(11.2%)
WEIGHT		
Gain	14 Cases	(51.8%)
Stationary	10 Cases	(37.0%)
Loss	3 Cases	(11.2%)

SPUTUM	*Before Operation*	*After Operation*
Positive for Tubercule Bacilli	19 Cases	9 Cases
Negative for Tubercule Bacilli	4 Cases	14 Cases
No Sputum	4 Cases	4 Cases
Total	27	27

Changed from Positive to Negative 10 Cases (52.5%)

COMPLICATIONS

Hemorrhage (Less than 100 c.c.)	1 Case
Fluid Requiring Aspiration (1 aspiration)	1 Case
Pyogenic or Tuberculous Infection	0
Mortality	0

Absence of complications noted also in four exploratory procedures without pneumolysis; and in seven operative cases since February 1, 1933.

CONCLUSIONS. Sixty per cent of pneumothorax patients have adhesions. It is unjustifiable to maintain an inadequate pneumothorax. If kept up too long, opportunity arises for extension of the disease.

Almost half of all pneumothorax cases may be candidates for this procedure if the adhesions interfere with the proper progress of the cure.

Nearly 90 per cent of the cases operated upon can be definitely improved.

Any patient who shows X-ray evidence of adhesions, and with an unsatisfactory pneumothorax should have the benefit of a thoracoscopic examination before being recommended for thoracoplasty.

"A good pneumothorax is always preferable when it can be obtained with little risk, but a good thoracoplasty is better than a poor pneumothorax."

This operation is not an end in itself. It is a means by which a useless pneumothorax can be converted into an adequate one. The division of adhesions results in closure of cavities, relaxation of tuberculous areas, diminution of sputum with disappearance of tubercle bacilli, cessation of streaking and cough.

Operation requires close cooperation between surgeon and physician in charge of tuberculous patients.

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TYPHUS AND ROCKY MOUNTAIN SPOTTED FEVER.

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For the past ten years we have known that typhus and spotted fever were both present in Virginia, typhus being limited largely to the coastal towns and spotted fever occurring in several localities widely scattered throughout the State.

The endemic variety of typhus found in Virginia is transmitted to man from infected rats by rat fleas. The majority of cases occur in the late summer and fall when rat fleas are most prevalent, although occasional cases occur throughout the year. Spotted fever is transmitted by several species of ticks. The Latin name for the tick probably responsible for most of the Virginia cases is *Dermacentor variabilis*. This tick is usually known as the Eastern dog tick or wood tick. These ticks are found most often in the spring and early summer.

They appear in the latter part of March, are most numerous in May, June and the first part of July, rapidly disappearing the latter part of July or early in August. Depending on this seasonal prevalence of ticks we find human cases of spotted fever occurring customarily in the spring and early summer. Occasional cases have been noted at other seasons but this is unusual. In contrast to endemic typhus and its more common prevalence in towns and cities, spotted fever occurs more often in the rural inhabitants or those having rural contacts as picnickers, campers and the like.

Clinically the two diseases have many points in common. The incubation period in endemic typhus varies from six to fourteen days. The onset may be preceded by poorly defined prodromata for a few days but in the majority of cases the disease begins suddenly with chills, fever, headache, and prostration. The appetite is lost and constipation is the rule. The fever rises steadily, each day's maximum exceeding that of the previous day, the highest point being reached in from three to six days. Morning remissions of from 1 to 3° F. occur. The temperature at its maximum seldom reaches and rarely exceeds 105°. The fever terminates usually by rapid lysis about the end of the second week, most often on the fourteenth day, the great majority being afebrile by the sixteenth day. The eruption most often appears on the fifth day, occasionally being noted as late as the seventh. It appears first on the chest and upper abdomen especially over the lower ribs. No extension of the rash from this location may be noted in some of the cases. In one case a total of seven macules were noted, while a second at no time presented more than a dozen and a half lesions. In more pronounced cases the development of the rash is rapid during the first twenty-four hours after its appearance. In cases showing a well marked rash the eruption is also present on the medial surfaces of the upper arms, on the shoulders, over the back, and may extend down the forearm, usually leaving the wrists and hands free. Occasionally in severe cases the rash may involve the thighs and the palms and soles. The face and neck are seldom involved. The rash in the mild cases may persist only two or three days and in the majority of cases disappears by the time the temperature reaches normal. In the rare cases the rash may persist as discolorations for a week or ten days after defervescence. These discolorations may be especially noticeable after taking a warm bath.

The eruption consists of macules two to three millimeters in diameter with rather poorly defined margins. The lesions fade on pressure but may not completely disappear. Occasionally some of the lesions may be maculopapular and occasional cases have been described in which no rash was observed during illness.

The pulse is apt to be slow, seldom exceeding 100 even with a high temperature. During early convalescence the pulse may remain for several days below sixty. This slow pulse may be supplanted by a rate higher than normal for a few weeks after moderate activity is resumed. After several attacks shortness of breath on moderate exertion may be present for a few weeks, suggesting a myocardium weakened by toxaemia.

Headache is almost always present from the beginning. It may involve the whole head but is more commonly frontal and is quite often intense lasting throughout the illness. In other cases headache may never be distressing, being present only a few days. It is occasionally absent throughout the disease. Some degree of mental disturbance is common. This may vary from vivid and not easily forgotten dreams to mild delirium in rare instances. Confusion and disorientation are more apt to be present at night. Lethargy, restlessness, insomnia, irritability may be noted. Tremors and in severe cases subsultus may occur. Generalized aching is often present. Some evidence of respiratory inflammation is common, often showing as a mild unproductive cough. Prostration may be present from the onset and in severe cases becomes quite marked during the second week. Constipation is usually present throughout the course of the disease. Photophobia and soreness of the eye muscles may occur. Slight chills followed by sweats are not uncommon at night. Complications are rare and convalescence in mild cases is speedy. Following the more severe cases normal strength may be regained slowly. In any event recovery is complete. The case fatality is estimated at less than 1 per cent, practically all the deaths occurring in patients over 50 years of age.

The total white cell count usually falls within normal limits or there may be a leucopenia. The urine may show albumin and granular and hyaline casts at the height of the disease. The blood serum

contains agglutinins for *B. proteus* X_{19} in dilutions of 1:160 or more in nearly all cases. The highest titre is usually reached about the end of the second week and may reach a dilution of 1:40000.

The general features of spotted fever are similar to those recounted for endemic typhus but are usually intensified. The incubation period on the whole is somewhat shorter than that seen in endemic typhus, varying in spotted fever from two to twelve days, most often being three to seven days. The onset of spotted fever is like that seen in endemic typhus, but is more severe. Prostration may be marked from the beginning. Restlessness and insomnia are invariable in the severe western cases of the disease and are frequently met in the milder types. Nose bleed frequently occurs. Soreness, often severe, in the muscles and joints is common. The skin is sensitive to the touch. Abdominal pain and soreness occurring at the onset may simulate appendicitis.

The temperature rises somewhat more rapidly in spotted fever than in endemic typhus and is apt to be higher and the morning remissions less marked. The termination of the fever in spotted fever is by lysis as in endemic typhus but the duration is, on the whole, longer. Most of the spotted fever cases will remain febrile beyond the sixteenth day, often terminating about the twenty-first day.

The rash appears between the second and fifth days, usually on the third or fourth. The site of first appearance is important in differentiating the two diseases. As noted earlier, the first appearance of the rash in typhus is on the body, while in spotted fever the eruption is often first noted on the wrists and ankles. The extension of the eruption is rapid, usually first to the back, then arms, legs, chest and last on the abdomen where it is least marked. Unlike typhus, the palms and soles are frequently involved and occasionally the face and even the scalp is included. The eruption is macular at first, becoming fainter or almost disappearing during the morning remissions of fever. The macules become more distinct each day, becoming definitely petechial early in the second week in all but the mildest cases. The spots may become confluent, deep red, and purplish in color. In severe cases areas of necrosis of the skin may occur. This is more common on the scrotum, prepuce, fingers, toes, and lobes of the ears.

In spotted fever the pulse tends to be higher in ratio to the temperature than in endemic typhus. In severe cases, especially those ending fatally, the pulse is usually high, ranging from 130 to 160.

The nervous and mental symptoms are more severe in spotted fever than in endemic typhus. Delirium is more often encountered and coma usually precedes a fatal outcome. Following spotted fever, deafness, visual disturbances, slurring speech, and mental confusion have occasionally been noted for a few weeks. Convalescence is slower in spotted fever than in endemic typhus but in the end is apparently complete. The fatality of spotted fever in Virginia is about 25 per cent.

In spotted fever there is usually a definite leucocytosis. The urine frequently shows albumin and casts at the height of the disease. Usually agglutinins are produced for *B. proteus* X_{19} in a titre of 1:160 or more and a titre of 1:10000 may be reached.

There is no specfic treatment for either typhus or spotted fever. Supportive treatment is indicated with care that an adequate consumption of fluid is maintained. Some physicians recommend caffeine and digitalis as cardiac stimulants in severe cases.

The laboratory does not have a great deal of assistance to offer the clinician in the differential diagnosis between spotted fever and endemic typhus. The total leucocyte count is of some help in differentiating the two diseases from each other while the Weil-Felix is of no assistance in this regard. This agglutination reaction is present in both diseases, usually reaching its height about the end of the febrile period. There is some variation in the response of different serums to different strains of *proteus X* and cases of spotted fever have been encountered which developed no agglutinins in significant amounts for the strains usually employed for diagnostic purposes in this country. An agglutination titre of over 1:160 is generally considered as being of diagnostic significance. We are inclined to regard low titres with some doubt unless reinforced by typical clinical pictures.

PREVENTION

In the prevention of endemic typhus the same measures should be applied which have been found of value in the control of bubonic plague—the destruction of rats and rat harbors. A great deal can be done by the individual in keeping his premises free of rats, by cleaning up accumulations of rub-

bish which may serve as shelter for rats and by preventing access of rats to stored food and garbage.

In the prevention of spotted fever there are three measures which we may use: (1) Avoid ticks; (2) remove ticks from the person as early as possible; (3) be vaccinated.

On camping trips, if it is necessary to sleep in the open, care should be used in selecting a site for placing the bed, as ticks will crawl into a bed laid on the ground. Since ticks are usually most numerous where rodents are most abundant, areas well populated with rodents should be avoided. The safest camping ground is undoubtedly in standing timber where low vegetation is scanty. Proximity to trails and old roads should be avoided. Avoid brushy areas along streams as camping grounds.

Persons should be especially watchful when walking along trails. Ticks tend to concentrate on vegetation along the sides of trails and in the bushes along the edge of wooded areas. Similarly, vegetation along roadsides and grassy strips in the middle of little used roads are often very dangerous. It is especially desirable to watch the clothing when following trails or old roads.

In the prevention of tick bite, the first precaution is the wearing of such clothing as will prevent ticks from getting underneath. This may be accomplished to a considerable extent by wearing high boots, leggings, puttees, or socks that are worn outside the trousers legs. With such precautions taken, most ticks will crawl up the outside of the clothing and can be removed from the neck when contact with the skin makes their presence known. Passing the hand over the neck occasionally to feel for ticks is a good habit to acquire.

Ticks are far more likely to secure a hold on rough clothing than on clothing of smoother texture. There are advantages in both, however. Fewer ticks secure a hold on smooth clothing; but, on the other hand, on cloth with a heavy nap their movements are impeded and are necessarily much slower. If the legs of the trousers are carefully watched, most ticks can be picked off soon after they catch hold.

In spite of precautions, however, a certain number of ticks will reach the body through the various openings in the clothing. It is therefore important that the above precautions be supplemented by the examination of the body and the inside of the clothing. Since ticks seldom attach immediately (unless late in the season), and are seldom infectious until after having been attached for a few hours, such examinations made twice each day (early afternoon and on retiring) should ordinarily be sufficient. In heavily tick-infested areas, however, or in sections known to be particularly dangerous, more frequent examinations should be made. When retiring, a complete removal of the clothing is desirable. Both clothing and body should be examined carefully and, if possible, any clothing not worn at night should be so placed that any undiscovered ticks will be unlikely to crawl from the clothing to the bed. If two or more persons are together they should assist one another in the examination. If the person is alone, the back and other portions of the body that cannot be seen should be explored with the hands, paying particular attention to the hairy portions.

Ticks may be removed from man and domestic animals with the fingers, but a better plan is to use a pair of small forceps or tweezers. With these the tick may be seized by the head, close to the skin, and easily removed. There is no danger of leaving the tick's head embedded in the skin. Care should be exercised against crushing the tick, as the contents of infected ticks are dangerous. After removing or handling ticks, the hands should be washed thoroughly with soap and water.

Two or three inoculations of the vaccine give a degree of protection usually sufficient to last through one tick season, but the immunity apparently is not permanent. Occasional cases of spotted fever have developed in vaccinated persons, but the vaccine apparently lessens the severity of the disease and seems to insure recovery. For its full protective value the vaccine should be taken at least ten days before exposure to tick bite. The vaccine is of no value in the treatment of spotted fever.

We do not recommend this vaccine for general use as the incidence of spotted fever is too low to demand this. We do feel, however, that in localities where cases of spotted fever have occurred the use of the vaccine is worth while. Chief reliance should be placed in removing ticks from the clothing and body before they become attached.

The vaccine is manufactured only by the U. S. Public Health Service and may be procured by application to the State Department of Health.

HOSPITALIZATION BY THE GROUP PAYMENT PLAN.

R. W. GARNETT, M. D.,
Danville, Va.
Health Officer of Danville

In a Health Survey recently conducted in Danville by the Health Department through a CWA allowance, 3,000 white and 1,000 colored families were visited. This work was done by ten women under the direct supervision of Mrs. Iva B. Arvin.

Of the many interesting facts and trends discovered from a study of the questionnaires one of the most significant deals with the question of hospitalization. To the question "Would you favor a good plan of hospital insurance?" 2,200 of the 3,000 white and 825 of the 1,000 colored families surveyed answered "Yes."

This manifestly reveals an interesting and significant trend of opinion on the part of a large percentage of Danville families who desire to provide for the emergency situation that the future may hold for them.

In Danville at the Health Office we have had frequently to deal with trying situations when accidents or the necessity of an operation has brought men who desire to be independent and to meet their own obligations up again the problem of being forced to ask for public aid.

We have long felt that some plan of insurance might be devised whereby hospital bills can be taken care of and the load of city cases be made lighter.

Within recent months a number of cities in the United States are undertaking to solve this same sort of problem, through what is coming to be known as "Hospitalization through the group payment plan."

The plan in principle provides that an organization be set up and those desiring it to be given opportunity to join by payment of an admission or membership fee of, say $2.00, and then monthly dues of, say $1.00 per month for single persons with a small additional amount for each member of his family.

Each subscriber to such a Hospital Service is entitled to admission to the member hospital of his choice when necessity for hospitalization arises, the decision as to the necessity and as to the length of stay being determined by himself and his private physician. When the member leaves the hospital, the bill is paid by the secretary of the fund.

The plan as developed in this country does not cover bills for doctors services, but covers only hospital bills. There is absolutely no interference with freedom of choice of physician. The matter of the doctors professional service and the payment for the same is entirely private and personal. It is found that this plan frees patients from worry as to how the hospital bill is to be met.

Membership in such a group usually entitles a member to from twenty-one to forty-two days hospitalization in any one year. The advantage of the plan from the standpoint of both the participating hospitals and the patients should be apparent. The hospital is assured prompt payment of its bills and it is being found that the income of hospitals under this plan is very considerably increased.

Experience shows that one person out of fifteen in such insured groups requires hospitalization during any one year. To that one this plan lifts what is often a very heavy burden of worry as well as a financial obligation. The other fourteen are, of course, fortunate in not needing hospitalization and have probably not missed very much the small amounts paid monthly into the Hospital Fund.

In an article published in *"Modern Hospital,"* Michael M. Davis tells us of the development of a plan of this nature in England whereby working men are able to pay their own hospital bills to a much greater extent than is done in America. Birmingham, for example, with a population of over one and a half million shows that 432,000 belong to a hospital association. Birmingham is only one of many places in England from London down to the small towns covering about one-fifth of the entire population.

In Charleston, W. Va., "Hospital Service, Inc.," covers seven hospitals. Here a membership fee of $2.00 is charged and $1.00 per month for the head of the family and small additional amounts for each additional member of the family. This service pro-

vides semi-private accommodations together with meals, general nursing care, use of operating room, needed anaesthetic, three X-ray pictures to one illness or injury and all laboratory service together with routine medicines, routine surgical dressings, hypodermics, casts and operating room supplies.

Service is effective as follows: for accidental injury, immediately after becoming a member; for sickness, fifteen days after becoming a member; for tonsil and adenoid cases, conditions existing at the time of becoming a member, chronic and incurable conditions and diseases or illnesses peculiar to women, six months after becoming a member.

Dr. Harold Glascock, of Raleigh, N. C., writes in answer to an inquiry, "We think, and nearly everyone who has seen the set-up seems to think, it is one of best planned organizations in this field of work. The organization is progressing nicely here. I feel that it is a great step forward in the hospital game. It will go a long way in accomplishing things in hospital work."

Mr. John Hart, Secretary-Manager of Hospital Service, Inc., Charleston, W. Va., writes, "Our plan has been in operation since January 1, 1933, and has enjoyed very satisfactory growth despite many obstacles which we have had to overcome. New members are now being enrolled at a rate in excess of two hundred per month and we are quite confident of the general acceptance and approval of this plan by the public throughout this area.

There are a large number of families, especially in our industrial communities, who are living on or below the economic borderline and to whom illness and debt are a constant specter.

To some, when the need for hospitalization arises, this means putting off operations or special treatment; to others, it means calling on the city or on charity. To others it means borrowing under very unfavorable conditions, often at high rates of interest in order to meet an emergency.

Many patients in hospitals feel harassed and worried as to how the bill is to be paid, a state of mind which naturally retards recovery.

To physicians, to hospitals and to that great in between group of people who want to be independent and meet their own obligations,—people who do not want charity and who do not have financial reserves—some wise plan of hospital insurance appears to be greatly needed.

To physicians it should be reassuring to know that the patient does not have to worry about hospital bills.

To hospital managements, the assurance afforded of more adequate financial income often is urgently needed.

The setting up and carrying on of a wise plan of hospital insurance will, of course, be a difficult undertaking. The overhead costs must be kept as low as possible and commercialization guarded against.

To the public health official, good hospital service is a tremendously important factor in the organization necessary to promote and conserve our vital human resources. To have this scientific service brought within the reach of all the people is an ideal toward which all the elements in the modern community must strive.

Its realization will require that public health officials, physicians, hospital superintendents, leaders of industry and Mr. Average Man work together in a spirit of cooperation toward the end that adequate medical and surgical hospital service be brought within the reach of all, through the operation of a plan whereby each pays his part.

Will insurance or "Hospitalization by the group payment plan" prove to be the answer to these important questions?

Woman's Auxiliary, to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

The National Meeting.

The annual meeting of the Auxiliary to the American Medical Association is uppermost in the minds of many at this time. This is to be held in Cleveland, Ohio, June 11th-15th, under the presidency of Mrs. James Blake, of Hopkins, Minn. A

very capable group of doctors' wives, under the able supervision of Mrs. Clyde L. Cummer, has charge of the social affairs for the convention. The tentative program of entertainment is as follows:

MONDAY, JUNE 11th—

Luncheon of the Auxiliary Board at Hotel Carter.

Dinner in honor of past presidents and board at Hotel Carter.

TUESDAY, JUNE 12th—

Luncheon, Bridge and Style Show, Lake Shore Hotel.

WEDNESDAY, JUNE 13th—

Auxiliary Luncheon at the Hotel Carter.

THURSDAY, JUNE 14th—

Luncheon at Country Club, Sight-seeing Tour.

"Bring-Your-Husband Dinner"—Hotel Carter.

FRIDAY, JUNE 15th—

Women's Golf Tournament, Wentwood Country Club.

Along with this splendid social program, which is entirely in the hands of the wives of the Cleveland members of the American Medical Association, will go a program of business planned and directed by the Auxiliary. The reports to be heard and the business to be transacted this year are of such import that the meeting cannot help being of exceptional interest to every Auxiliary member.

Mid-Tidewater Auxiliary.

The recently organized Auxiliary to the Mid-Tidewater Medical Society met at Saluda, Va., on April the 26th, at the time of the quarterly meeting of the doctor's organization. The ladies met in the home of Dr. and Mrs. Horace F. Hoskins and, after a business session, were entertained at luncheon by Mrs. Hoskins, at the hotel. Officers elected at this time are: President, Mrs. Hawes Campbell, Enfield; vice-presidents, Mrs. A. Warner Lewis, Aylett, and Mrs. Horace F. Hoskins, Saluda; secretary, Mrs. M. H. Harris, West Point. The next meeting will be held in Gloucester in July.

Richmond Auxiliary.

On the evening of May 16th the Auxiliary to the Richmond Academy of Medicine sponsored a play "Guests at Garrygrath" which was given by the Little Theatre League. This was particularly appreciated because the play is a production of Mrs. Frank L. Apperly, wife of a Richmond physician. Mrs. Apperly directed the play as well as acted as a member of the cast. The Richmond Auxiliary is most fortunate in having Mrs. Apperly who recently came to Richmond from Australia, as a member of their group.

The proceeds of the performance will go toward the pathological museum which is a new undertaking of the Richmond Academy.

Public Health Statistics

WARREN F. DRAPER, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during April, 1934, showed the following cases: Typhoid and Paratyphoid, 17; Diphtheria, 64; Scarlet Fever, 112; Measles, 5,713; Chickenpox, 341; Meningitis, 10; Poliomyelitis, 0.

The number of cases of typhoid and paratyphoid fever reported from the following counties were: Accomack 1; Alleghany 1; Augusta 1; Bedford 1; Brunswick 1; Buchanan 1; Lancaster 1; Lunenburg 1; Mecklenburg 1; Rappahannock 1; Russell 1; Tazewell 1; Lynchburg City 1; Richmond City 4.

Epidemic Meningitis was reported from: Alleghany 1; Dickenson 4; Rockbridge 1; Spotsylvania 1; Washington 1; Wise 1; Danville City 1.

The number of cases of diphtheria has decreased from 121 cases in March to 64 cases in April. They were scattered in 26 counties and 7 cities.

Scarlet Fever has likewise showed fewer cases—204 in March and 112 in April. They were reported from 40 counties and 8 cities.

There were 1,200 fewer cases of measles. Measles was reported from 89 counties and 10 cities.

Chickenpox was reported in 38 counties and 10 cities.

Typhus and Rocky Mountain Spotted Fever.* As this review goes to press two cases of Rocky Mountain Spotted Fever occurred in the same household in Richmond County, one of which died. During 1933, 23 cases were reported in Virginia, with 4 deaths.

*See article by Dr. W. F. Draper, on page 171.

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Editorial

Pituitary Hormones.

Among the endocrines, the knowledge of which has been marvelously expanded during the past ten years, probably most progress has been made in the understanding of the function of the pituitary. We now know of eight separate active hormones peculiar to this small gland. Any day we may be introduced to others. It staggers the imagination to think of the possibilities of the further development of knowledge concerning the function of only a few of them. Here in this gland, as Dr. R. J. Main shows in his important contribution to this issue of the MONTHLY, is initiated the mystery of growth, the riddle of the menstrual cycle and its aberrations, as well as the secret of lactation. Here also may lie long sought explanations bearing on the pathogenesis of exophthalmic goiter, prostatic hypertrophy, and diabetes, as well as new light on adrenal function. We only await potent, reliable and pure extracts of these various hormones to reach the full clinical rewards of these epoch-making discoveries of animal research.

The Richmond Academy of Medicine Acts.

At a recent meeting of the Richmond Academy of Medicine its Committee on Economics headed by C. C. Coleman brought in a report that may have far-reaching consequences not only in the city of Richmond but throughout the State of Virginia. The full report covers some seventy-five pages and bespeaks an exhaustive investigation of a subject that is foremost in the medical thought of today. Its recommendations are as follows:

1. We recommend the continuation of a Committee on Medical Economics and Distributions of Medical Services, with power to appoint, in cooperation with the President of the Academy of Medicine, such sub-committees as may be necessary to study the various subdivisions of the problem of medical care as indicated in this and similar reports made in other cities. . . . We believe that prompt consideration should be given to the formation of as many of these sub-committees as is deemed necessary by the Academy.

2. We recommend that the cooperation of the Academy be offered to the City Department of Public Welfare with a view to (A) reorganization of the system of medical care of the indigent in their homes; (B) to the solution of certain controversial matters relating to complaints of interference by the Department of Public Welfare with private practice; (C) assistance to other agencies directed by the Department of Public Welfare and concerned in the medical treatment of the indigent patient.

3. We recommend that the Academy formu-

late plans for group hospital insurance, with the safeguards tabulated in the report, and with due regard to the economic soundness of such plans.

4. We recommend that the Academy use its influence through the proper channels to bring about a reduction in the number of admissions to the medical schools. There is an over-supply of physicians at the present time for adequate medical care, even with reasonable distribution of the physicians according to the local needs. The general over-supply shows an annual increase, according to reliable statistics.

5. We recommend that the Academy endorse and actively support plans for post-graduate medical education in Richmond and that it co-operate with plans which may be formed in other sections of the State.

The report and its recommendations were approved without a dissenting voice and sub-committees were immediately set up to carry forward the task projected by the central committee. Most significant is the Academy's unanimous approval of the principle of insurance. Still more to the point, instructions have been given the committee to prepare and present immediately for approval a plan for hospital insurance. It appears fairly well assured, therefore, that group hospital insurance on a city-wide basis will be in operation in Richmond within a few months.

Hospital Insurance.

Elsewhere in this issue of the MONTHLY appears a discussion of hospital insurance by the Health Officer of Danville where a health survey among 4,000 families has just been completed. Of particular interest is the fact that when asked if they favored a plan of hospital insurance two-thirds of the families questioned in the survey answered in the affirmative. Hospital insurance is being considered in several sections of the State at the present time and the plan appears to be gaining favor rapidly with the profession of Virginia.

Typhus and Rocky Mountain Spotted Fever in Virginia.

Both of these diseases occur in Virginia more frequently than is generally realized. They may be confused one with another or with other eruptive fevers. Since wood and dog ticks, known to convey Rocky Mountain Spotted Fever, flourish chiefly in the spring and early summer months, our rural population as well as campers from the cities should be on their guard from now on against the bite of these inhabitants of bushes and grass. We have been accustomed to think of typhus as louse-borne and therefore a disease of winter crowding, but the work of Allan, Maxcy and others in the South has suggested the possibility of transmission through rodents and the common rat flea, another summer-time menace. As we approach the open season for both these pests, readers of the MONTHLY will do well to ponder carefully the differential diagnosis and preventive measures outlined elsewhere in this issue by Dr. Warren F. Draper, State Health Commissioner.

Gradenigo's Syndrome.

A persistently discharging ear with or without mastoiditis, unilateral frontal headache, and homolateral abducent paralysis, constitute the symptomatic triad first pointed out by Gradenigo and recently to the fore in otological discussions. These symptoms are said to be indicative of an infection extending from the middle ear or the mastoid into the petrous pyramid. Petrositis produces inflammatory reactions in adjacent structures—pressure on the ophthalmic branch of the facial nerve and on the sixth nerve as it traverses the canal of Dorello. It can readily be appreciated that an infection in this area cannot be approached surgically without considerable hazard. While Eagleton, Kopetski and others are leading the way to a better understanding of this more recently recognized otological complication and are developing operative procedures designed to "unlock the petrous pyramid," practitioners in general may take comfort in the knowledge that there is ample evidence to show that many cases have responded satisfactorily to conservative treatment.

Department of Clinical Education of the Medical Society of Virginia

Post-Graduate Clinic Held at Medical College of Virginia.

This year the Post-Graduate Clinic given by the Medical College of Virginia in cooperation with the Medical Society of Virginia was combined with the Stuart McGuire Lectures.

Dr. Frank C. Mann, of the Mayo Foundation, Rochester, Minnesota, gave the Stuart McGuire Lectures. On Monday night, April 2nd, his subject was "The Anatomy and Physiology of the Liver." On Tuesday night, April 3rd, Dr. Mann lectured on the "Experimental Pathology of the Liver."

On Tuesday, clinics by the Departments of Pediatrics, Obstetrics, Surgery and Medicine were held in the morning from 10:00 A. M. to 1:00 P. M. In the afternoon ward rounds in the same departments were conducted. From 4:00 to 5:30 P. M. a round-table discussion on "Medical Economics" was conducted. There was very much interest manifested in this round-table.

The clinic attendance this year was very satisfactory, both from the standpoint of numbers and interest on the part of those attending. The following is a list of those registering:

Dr. O. T. Amory, Newport News.
Dr. C. H. Armentrout, Flint Hill.
Dr. G. B. Barrow, Staunton.
Dr. C. D. Bennett, Chatham.
Dr. E. W. Bennett, Elizabethtown, N. C.
Dr. J. M. Bowling, Durham, N. C.
Dr. T. L. Brooks, Oceana.
Dr. H. G. Byrd, Louisa.
Dr. B. L. Carlston, Elizabethtown, N. C.
Dr. Wright Clarkson, Petersburg.
Dr. C. B. Courtney, Newport News.
Dr. H. S. Daniel, Louisa.
Dr. G. A. Ezekiel, Richmond.
Dr. J. E. Fulghum, Louisburg, N. C.
Dr. T. L. Gemmill, Petersburg.
Dr. S. E. Gunn, Hopewell.
Dr. H. T. Hawkins, Waynesboro.
Dr. J. D. Hagood, Clover.
Dr. C. L. Haywood, Durham, N. C.
Dr. R. L. Hillman, Emory.
Dr. J. Allison Hodges, Richmond.
Dr. W. Hollister, Kunson, Korea.
Dr. B. A. Hopkins, Stuart.
Dr. J. Shelton Horsley, Richmond.
Dr. John Hundley, Jr., Lynchburg.
Dr. C. H. Iden, Berryville.
Dr. D. M. Kipps, Front Royal.
Dr. E. G. Kyle, Newton Falls, Ohio.
Dr. Herbert Lewis, Dumbarton.
Dr. R. H. Manson, McKenny.
Dr. E. S. McDowell, Plattsburg, N. Y.
Dr. G. W. Mitchell, Wilson, N. C.
Dr. J. J. Neal, Danville.
Dr. Dan O. Nichols, Charlottesville.
Dr. Louis Perlin, Richmond.
Dr. Robert S. Preston, Richmond.
Dr. T. G. Pretlow, Chester.
Dr. J. N. Reeves, McKendree, W. Va.
Dr. J. E. Richardson, Axton.
Dr. Irwin Rifkin, Richmond.
Dr. E. B. Robertson, Danville.
Dr. J. L. Rawls, Suffolk.
Dr. A. M. Sneed, Toano.
Dr. A. U. Stroupe, Jr., Mount Holly, N. C.

Regular Spring Clinic at University of Virginia Hospital.

The thirteenth in the series of post-graduate clinics at the University of Virginia Hospital was held on Thursday and Friday, May 17th and 18th. A clinical-pathological conference, conducted by Dr. Louis Hamman, of Baltimore, was a special feature of the program, which included clinics on fractures by Drs. E. P. Lehman and R. V. Funsten, routine handling of cases of the Out-Patient Department by the staff of the newly organized tumor clinic, communicable diseases by Drs. K. F. Maxcy and W. W. Waddell, hay-fever by Dr. Oscar Swineford, Jr., and a problem child clinic by Dr. D. C. Wilson. For the evening meeting on Thursday the time-honored custom was adhered to of a round-table discussion, led by members of the staff, of topics submitted by the visiting physicians.

Below is a list of the visitors registered for the clinics:

Dr. C. H. Armentrout, Flint Hill.
Dr. Howard Armstrong, Harrisonburg.
Dr. H. L. Baptist, Ivy.
Dr. R. E. Booker, Lottsburg.

Dr. D. P. Bowman, Crimora.
Dr. H. S. Chelf, Culpeper.
Dr. C. E. Conrad, Harrisonburg.
Dr. J. C. Coulter, Charlottesville.
Dr. F. R. Crawford, Farmville.
Dr. H. S. Daniel, Louisa.
Dr. E. D. Davis, Standardsville.
Dr. E. S. Elliott, Independence.
Dr. S. E. Gunn, Hopewell.
Dr. Percy Harris, Scottsville.
Dr. W. F. Hartman, Swoope.
Dr. J. F. Hubbard, Waynesboro.
Dr. D. M. Kipps, Front Royal.
Dr. W. A. Kyger, Free Union.
Dr. Anita Lotti, Charlottesville.
Dr. J. E. Loyd, Natural Bridge.
Dr. S. G. Miller, Piney River.
Dr. Rees Morgan, Roanoke.
Dr. E. J. Moseley, Jr., Richmond.
Dr. J. M. Mundy, Charlottesville.
Dr. W. A. Murphy, Staunton.
Dr. E. B. Nuckols, Cumberland.
Dr. W. H. Paine, Charlottesville.
Dr. C. E. Peterson, Roanoke.
Dr. M. J. Payne, Staunton.
Dr. B. A. Rice, Forest.
Dr. L. G. Roberts, Moormans River.
Dr. Alex. F. Robertson, Jr., Staunton.
Dr. C. W. Rodgers, Staunton.
Dr. R. M. Shelton, Unionville.
Dr. J. P. Snead, Jr., Sperryville.
Dr. H. B. Spencer, Lynchburg.
Dr. R. M. Taliaferro, Lynchburg.
Dr. J. F. Thaxton, Tye River.
Dr. J. J. Waff, Shenandoah.
Dr. W. H. Walters, Roanoke.
Dr. Harold B. Webb, Waynesboro.
Dr. B. K. Weems, Waynesboro.
Dr. H. F. White, Fishersville.
Dr. Hunter Williams, North Garden.
Dr. John E. Womack, Staunton.

Planning for Pediatrics Courses Continues.

The Pediatric Society of Virginia, through Dr. Thomas D. Jones, has reassured the Department of Clinical Education of its willingness to cooperate in arranging clinics or courses. It has felt, however, that the original intention of using members of the Society for three days as instructors in the courses must be changed so that not more than a day at a time would be required of any clinician.

The tentative list of topics suggested as those that would always prove interesting includes: Infant feeding; respiratory infections; gastro-intestinal disturbances; communicable diseases; nutrition, including the various nutritional disturbances; mental hygiene; heart diseases; and acute infections of the central nervous system.

At the last report the funds voted by the Medical Society at Lynchburg for an experimental program of pediatrics courses have been decreased by small incidental expenses to the sum of $368.45. This amount, plus any fees which may be required of members of the courses, will mean a severely limited program. In the lack of other resources not now in prospect, it is anticipated that the Department of Clinical Education can perhaps best attempt courses of eight meetings located in four towns or cities not too close to medical centers, or conduct one-day pediatric clinics at several points in cooperation with local societies.

Members of the Department of Clinical Education are engaged in seeking the wisest solution to the problem. They invite the suggestions of the profession and promise an active even if restricted program when plans can be fully developed.

Courses in Prenatal and Postnatal Care to be Resumed in July.

The temporary services of Dr. M. E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction, were requested last fall for a brief survey of conditions in maternity cases in a Tennessee county. By action of the Gibson County Medical Society, the survey was authorized in April, and Dr. Lapham's application for leave from June 2nd to July 9th was granted by the executive committee of the Joint Committee.

The period falls between the ninth circuit in the Northern Valley, which will be completed at the end of May, and the tenth circuit of classes proposed for northeastern Virginia.

Another new group of advance enrollments for a course in the tenth circuit, furnished to the Joint Committee by Dr. H. A. Latane, will establish a study center in Alexandria. The initial enrollments include the following: Drs. W. E. Beattie, W. H. Janney, H. A. Latane, J. W. Love, S. B. Moore, Llewellyn Powell, W. C. West, W. B. Wilkins.

GEO. W. EUTSLER,
Secretary Joint Committee and Executive Secretary Department of Clinical Education.

Proceedings of Societies

The Bedford County Medical Society

Recently reorganized, with Dr. C. H. Bondurant, of Bedford, as president, and Dr. J. A. Rucker, also of Bedford, as secretary-treasurer.

At this meeting, the following papers were presented: History of Medicine During the Past 125 Years by Dr. E. L. Johnson, of Bedford; Transurethral Resection by Dr. S. Beverly Cary, of Roanoke, and Diabetes by Dr. C. D. Nofsinger, also of Roanoke.

Hereafter meetings will be held quarterly.

The Mecklenburg County Medical Society

Met at Clarksville, Va., for a supper meeting on May the 8th. This Society has the record of having enrolled all doctors in the county and ten of the fourteen were present. Following a six o'clock supper, papers were presented by Dr. J. M. Hutcheson, Richmond, on Cardiac Therapy; Dr. Frank Johns, Richmond, on Experience in Handling Acute Appendicitis; Dr. R. H. Fuller, South Boston, on Report of Some Cases of Mistaken Diagnosis in Acute Abdomen; and Dr. W. R. Bracey, Richmond, on Cancer of the Lung. Dr. H. H. Braxton, of Chase City, was present and elected to membership in the Society. It was decided to hold the fall meeting in Chase City.

Dr. L. H. Bracey, South Hill, is president of the Society, and Dr. W. W. Wilkinson, La Crosse, secretary.

The Post-Graduate Medical Society of Southern Virginia

Held a clinical meeting on May 15th, at the Southside Hospital in Farmville, Va., with an attendance of about fifty physicians. Dr. W. D. Prince, Stony Creek, is president, Dr. Herbert C. Jones, Petersburg, secretary, and Dr. Wright Clarkson, Petersburg, chairman of the Steering Committee. Dr. Lawrence P. Jones, North Emporia, was elected to membership.

The program included papers by Dr. S. W. Budd, Richmond, on Sickle Cell Anemia; Dr. William B. Porter, Richmond, on Blood Dyscrasias, both of which had lantern slides; Dr. C. S. Dodd, Petersburg, on Eye, Ear, Nose and Throat Conditions Frequently Seen in General Practice. Case reports were also presented by Dr. Allen Barker and Dr. J. Bolling Jones, both of Petersburg. This program was followed by a Round Table discussion of Medical Economics, led by Dr. Wyndham B. Blanton, of Richmond.

The Mid-Tidewater Medical Society

Held its regular quarterly meeting in Saluda, Va., April 26th, with the president, Dr. Robert R. Hoskins, Mathews, presiding. There was a large attendance of members and visitors. The subject for discussion was "Varicose Veins and Treatment for Same." Drs. W. W. Rixey and Dr. D. S. Daniel, both of Richmond, were guest speakers.

The next meeting of the Society will be held in Gloucester in July.

Patrick-Henry Medical Society.

The regular quarterly meeting of this Society was held at Stuart, Va., April 5th, Dr. J. T. Shelburne, president, presiding.

Dr. J. Russell Perkins, of Winston-Salem, N. C., invited guest, spoke on the Management and Treatment of the Acute Middle Ear. Dr. W. C. Akers, of Stuart, Va., gave a paper on Some Interesting Surgical Cases.

The meeting was preceded by a banquet at Hotel Perkins, at which time Mr. J. D. Hooker, Mayor of Stuart, welcomed the doctors to the town.

The Society will hold its next meeting in July at Martinsville, Va.

Dr. C. R. Titus, Bassett, is secretary of this Society.

The Lynchburg Academy of Medicine, Inc.,

Held its May meeting on the 7th, at which time resolutions of respect were passed, regretting the death of Dr. William H. Welch, of Baltimore.

Dr. Carrington Williams, of the McGuire Clinic, Richmond, Va., presented a series of cases illustrating "Lesions of the Stomach," demonstrating each case with lantern slides. The presentation was very instructive and well received by the members present.

Dr. James Morrison is president and Dr. John Hundley, Jr., secretary of the Academy. Both are of Lynchburg.

The Augusta County Medical Association, Inc.,

Held its usual quarterly meeting at the Y. M. C. A. Building, Staunton, Va., on the afternoon of May the 2nd. The features of this meeting were clinical case reports and a paper by Dr. Frank P. Coleman, of Stuarts Draft, on Case Reports in the Treatment of Internal Hemorrhoids by the Injection Method.

Dr. H. T. Hawkins, Waynesboro, is president, and Dr. W. F. Hartman, R. F. D., Staunton, secretary.

South Piedmont Medical Society.

The regular Spring meeting of this Society was held in South Boston, Va., April 17th, under the presidency of Dr. F. O. Plunkett, Lynchburg. There were a number of interesting papers on the program and supper was served between the afternoon and evening sessions.

At the business meeting, the following officers were elected: President, Dr. George A. Stover, South Boston, who has been the efficient secretary of this organization for a number of years; vice-presidents, Dr. C. D. Barksdale, Sutherlin; Dr. C. D. Bennett, Chatham; Dr. H. H. Hurt, Lynchburg; and Dr. L. H. Hoover, Clarksville; secretary-treasurer, Dr. John A. Owen, Turbeville.

Officers in Local Societies.

Not previously reported, are:

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President—Dr. S. P. Hileman, Millboro.

Secretary—Dr. R. P. Hawkins, Jr., Clifton Forge.

DANVILLE-PITTSYLVANIA COUNTY

President—Dr. S. E. Hughes, Danville.

Secretary—Dr. P. W. Miles, Danville.

News Notes

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its annual meeting in Lynchburg, Va., May the 5th, under the presidency of Dr. H. Grant Preston, Harrisonburg, with Dr. Edwin W. Burton, University, as secretary. A scientific program of much interest was presented. At this meeting, plans were brought to the attention of the members for the establishment of a post-graduate course in eye, ear, nose and throat at the University of Virginia. The idea was heartily endorsed by the Society and plans are now under way for the establishment of such courses before the next meeting of the Society. The exact dates have not been decided but the courses will be of an intensive nature and will last over a period of four or five days. The members felt that there was a definite need in the State for such courses.

The following officers were elected for the ensuing year: President, Dr. B. R. Kennon, Norfolk; vice-president, Dr. E. W. Burton, University; and secretary-treasurer, Dr. G. G. Hankins, Newport News. The date and place of next meeting will be named later.

News Notes from the Medical College of Virginia.

Commencement exercises closing the ninety-sixth session of the Medical College of Virginia were held at the Mosque Theatre, Tuesday evening, May 29th, at eight o'clock. Dr. Francis Pendleton Gaines, President of Washington and Lee University, Lexington, Va., was the speaker.

The commencement sermon was given Sunday evening, May 27th, at eight o'clock, by Dr. Churchill J. Gibson, Rector, Saint James Episcopal Church.

The honorary degree of doctor of science was conferred upon Dr. R. B. Teusler, Director of Saint Luke's International Medical Center, Tokyo, Japan. Dr. Teusler is an alumnus.

There were a number of graduates from the various departments, this year, representing eleven states, two foreign countries, and fifty-nine of the one hundred counties in Virginia. A list of the graduates in medicine, with their hospital appointments, will be given in the next issue of the MONTHLY.

The enrollment for the session in all schools and departments was 716; 347 in medicine, 107 in

dentistry, seventy-six in pharmacy, and 186 in nursing. The student body represented twenty-three states, four foreign countries, and seventy-nine of the counties of Virginia.

News from University of Virginia, Department of Medicine.

On April 13th Dr. John H. Neff spoke before the Ohio County Medical Society, meeting in Wheeling, W. Va., his subject being Experience with Malignant Tumors of the Kidney.

Recent visitors at the Medical School were Dr. Albert E. Casey, of the Rockefeller Institute for Medical Research, and Dr. Samuel Detweiler, Professor of Anatomy at Columbia University.

On April 17th Dr. J. Edwin Wood spoke on Recent Advances in the Study of Hypertension, at the meeting of the South Piedmont Medical Society.

On April 18th Dr. C. C. Speidel gave the Sigma Xi lecture at Ohio University, Athens, Ohio; he spoke on Growth, Irritation and Repair of Nerves. On April 20th he delivered this lecture before the Honor Biology Society of Washington and Lee University.

At the time of the annual meeting of Sigma Xi on April 25th, the John Horsley Memorial Prize, established in 1925 by Dr. J. Shelton Horsley, of Richmond, Va., as a memorial to his father, was awarded to Dr. Oscar Swineford, Instructor in Medicine at the University of Virginia, for his paper on The Specific Control of Experimental Serum Reactions. This prize is awarded every two years by a Committee of the Medical Faculty for a thesis upon some subject related to general surgery. The address of the meeting was given by Professor George H. Parker, National President of Sigma Xi and Director of the Zoological Laboratories of Harvard University, on the subject of "The Transmission of Neurohumors." The President and Visitors Prize was awarded to Dr. C. C. Speidel for his paper on Studies of Living Nerves. II. Activities of Ameboid Growth Cones, Sheath Cells, and Myelin Segments, as revealed by prolonged observation of Individual Nerve Fibers in Frog Tadpoles. Dr. Speidel has now won this prize for two years in succession.

The Virginia State Dental Association held its annual meeting in Charlottesville on April 30th to May 2nd. On the final day clinics, planned to cover the field of Medicine with reference to Dentistry, were held at the Medical School.

On April 24th Dean J. C. Flippin and Dr. J. R. Cash gave a joint paper before the Richmond Academy of Medicine, on Autopsy Findings in Certain Cases of Jaundice. Dr. J. H. Neff spoke on the subject of Renal Calculi; Dr. S. W. Britton on the Physiology of the Suprarenal Gland.

On April 26th Dean J. C. Flippin spoke before the Northern Virginia Medical Society at Flint Hill on the subject of Clinical Diagnosis of Digestive Disorders.

At the meeting of the University of Virginia Medical Society on May 7th, Dr. E. M. K. Geiling, Professor of Pharmacology at the Johns Hopkins Medical School, gave a lecture on Some Newer Studies in Connection with the Function of the Posterior Lobe Hormone.

Dr. L. Floyd Hobbs,

Class of '32, University of Virginia, Department of Medicine, who interned at the University Hospital, has located at Jewell Ridge Va., where he is engaged in general practice.

Information Desired Concerning Congenital Malformations.

Mothers of congenitally malformed infants frequently ask "If I should give birth again, what is the chance that my next child will also be defective?" In an attempt to answer this question, the Gynecean Hospital Institute of Gynecologic Research of the University of Pennsylvania is conducting an intensive study of families into which congenitally malformed individuals have been born.

Special interest centers in families in which malformations have appeared in two or more children. Physicians who have knowledge of any such families are urged to communicate with: Dr. Douglas P. Murphy, Gynecean Hospital Institute, University of Pennsylvania, Philadelphia, Pa.

Dr. D. Edward Watkins,

Of the class of '31, University of Virginia, Department of Medicine, located at Waynesboro, Va. April the 1st, where he is associated with Dr. B. K.

Weems, for the practice of medicine and surgery. Dr. Watkins was on the surgical service at Memorial Hospital, Richmond, in 1931-32, and at Elizabeth Buxton Hospital, Newport News, Va., from the completion of that service through March of this year.

New Books Available to Members.

The following is a list of some newer books in the Library of the Medical College of Virginia, Richmond, which may be borrowed by members of the Medical Society of Virginia, the only charge being return postage:

Best, Harry—Blindness and the Blind in the United States.
Cabot—The Meaning of Right and Wrong.
Conybeare, J. J., ed.—Textbook of Medicine by various authors.
Darwin, Charles—Diary of the Voyage of H. M. S. Beagle.
Evans, H. M., et. als.—The Growth and Gonad-Stimulating Hormones of the Anterior Hypophysis.
Gardener—Essentials of Bacteriology.
Groves & Blanchard—Introduction to Mental Hygiene.
Groves—Marriage.
Guttmacher, A. F.—Life in the Making.
Harding—The Way of all Women.
Hollingworth—Psychology of the Adolescent.
Kilpatrick—Education for a Changing Civilization.
Kofoid, C. A., ed.—Termites and Termite Control.
Lynde—Everyday Physics.
Noyes, Arthur P.—Clinical Psychiatry.
Psychologies of 1925.
Robinson—Practical Psychology.
Rusby, Henry Hurd—Jungle Memories.
Shutes, M. H.—Lincoln and the Doctors.
Schneider, Edward C.—Physiology of Muscular Activity.
Schwesinger, Gladys C.—Heredity and Environment.
Sutton, R. L. and Sutton, R. L., Jr.—An Introduction to Dermatology.
Taylor, W. S.—A Critique of Sublimation in Males.
Woodworth—Psychology.

Dr. A. H. Deekens.

Richmond, Va., was elected president of the Virginia Chapter, Alumni of the University of Pennsylvania, at a dinner meeting held recently at the John Marshall Hotel, this city.

Dr. Hunter H. McGuire,

After an absence from the city of some months, has returned to his office at St. Luke's Hospital, Richmond, Va.

Virginia Academy of Science.

The twelfth annual meeting of the Academy was held in Harrisonburg, Va., May 4th and 5th, under the presidency of Dr. William A. Kepner, of the University of Virginia. There was an attendance of nearly four hundred. An important action of the Council, was the adoption of a resolution favoring a new and more effective pure food and drugs act, in accordance with a bill then pending before Congress. All sections were well attended and the papers and demonstrations were interesting.

Dr. William T. Sanger, president of the Medical College of Virginia, Richmond, was installed as president for the coming year and Dr. E. C. L. Miller, also of the Medical College of Virginia was re-elected secretary-treasurer, a position he has held since the organization of the Academy in 1923. The next session will be held at the University of Richmond, May 3 and 4, 1935.

Dr. E. G. Brumback,

Luray, Va., for about twenty-five years a member of the board of directors of the First National Bank in Luray, has just been elected vice-president of the bank.

Dr. Wyndham B. Blanton,

Richmond, Va., was the principal speaker before the Colonel William Allen Chapter, D. A. R., in Smithfield, Va., on May the 5th, his subject being "The Colonial Doctor."

Samuel D. Gross Prize.

The Philadelphia Academy of Surgery announces that essays will be received in competition for the Samuel D. Gross Prize of $1,500.00 until January 1, 1935. This prize is awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates to be American citizens.

Further information may be received from the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22nd St., Philadelphia.

Dr. Thomas G. Hardy

Has resumed his surgical practice in Farmville, Va., after a post-graduate vacation at the University of Virginia, the Medical College of Virginia, and Johns Hopkins University School of Medicine.

Graduate Fortnight of New York Academy of Medicine.

The Seventh Annual Graduate Fortnight of The New York Academy of Medicine will be devoted

to a consideration of Gastrointestinal Diseases. The Fortnight will be held October 22nd to November 2nd.

Sixteen important hospitals of the city will present coordinated afternoon clinics and clinical demonstrations. At the evening meetings prominent clinicians from various parts of the country who are recognized authorities in their special lines of work will discuss the various aspects of the general subject.

A comprehensive exhibit of anatomical, bacteriological and pathological specimens and research material will be shown. Many of the exhibits will be demonstrated.

The profession generally is invited to attend.

A complete program and registration blank may be secured by addressing Dr. Frederick P. Reynolds, The New York Academy of Medicine, 2 East 103d Street, New York City.

Dr. David B. Stuart,

Recently of Pulaski, Va., has moved to Roanoke, Va., where he has taken over the offices in MacBain Building, occupied by the late Dr. J. M. Ropp, who died recently as a result of an automobile accident.

Dr. George W. Skaggs,

Recently of Page, W. Va., is locating the first of June at Dublin, Va., where he has bought the home and will take over the practice of Dr. D. B. Stuart, who has moved to Roanoke. Dr. Skaggs is an alumnus of the Medical Colllege of Virginia, class of 1908.

New Superintendent at Jefferson Hospital.

Mr. C. B. Short has been appointed superintendent of Jefferson Hospital, Roanoke, Va., to succeed Dr. K. T. Redfield who has moved to Norfolk, Va.

The University of Virginia Hospital School of Nursing

Held the commencement exercises for its graduating class in Madison Hall, at the University, on the afternoon of May the 10th. There were a large number of graduates presented by Dr. J. C. Flippin, Dean of the Medical School. Diplomas were awarded by President John L. Newcomb of the University and the Hospital alumnae pins were presented by Dr John H. Neff. The address on this occasion was made by Dr. John L. Manahan, Dean of the Department of Education of the University, his subject being "The Nurse as a Teacher." Following the exercises, there was a tea at McKim Hall.

Married.

Dr. Harry Lee Denoon, Jr., Nassawadox, Va., and Miss Clara West Holland, daughter of Dr. and Mrs. Griffin Holland, of Eastville, Va., May 15th.

Dr. Otway Kyle Burnette and Mrs. Elizabeth George Haenny, both of Culpeper, Va., May 8th.

Dr. Dudley Curtis Ashton, recently of Richmond, Va., but now of Beckley, W. Va., and Miss Myrtle Irene Cooper, of Asheville, N. C., and Richmond, April 3rd.

Dr. R. O. Glenn,

Of the class of '31, Medical College of Virginia, is now located for practice at Mountain City, Tenn.

Winchester Memorial Hospital.

Dr. Hunter H. McGuire, Winchester, Va., has again been elected president of the Winchester Memorial Hospital, and Dr. James A. Miller, of that city, has been elected secretary to fill the vacancy caused by the resignation of Dr. J. E. Harris.

Conference of County Health Officers.

Special conferences for county health officers were conducted under the auspices of the Virigina State Department of Health on March 26th and 27th. Leading health and medical authorities addressed the meetings which convened at the offices of the Department, State Office Building, Richmond, Va.

The following topics were discussed: Public Health Administration—State and Local, by Dr. A. W. Freeman, Johns Hopkins University; Tuberculosis Problems in County Tuberculosis Control, by Dr. H. S. Mustard, Eastern Health District, Baltimore, Md.; The Possibilities of Research Studies in Connection with County Health Work, by Dr. J. A. Ferrell, of the Rockefeller Foundation: Problems in Relationship between Health, Welfare and Volunteer Agencies, by Dr. G. W. Spicer, Chairman of the Virginia Commission on County Government, and professor at the University of Virginia.

Among the leading trends of thought dominating the discussions were the pressing need for more trained public health workers, the importance of informing the public of what is being accomplished in the field of public health, and the definite relation between the organization of county health work and county government.

Dr. J. Allison Hodges.

Richmond, Va., an ex-president of the Medical Society of Virginia and one of the promoters of the plan for pre- and postnatal instruction of doctors of this state, was invited to be one of the honor guests at the banquet at the Waldorf-Astoria in New York City, May the 10th, on the occasion of the annual meeting of the Maternity Center Association of New York City.

Dr. William F. Hatcher,

Who formerly practiced in Bath County, Va., but later moved to West Virginia, is now located at McDowell, W. Va. He is a member of the class of '29, Medical College of Virginia.

Dr. J. Stuart Staley,

Of the class of '33, Tulane University, School of Medicine, New Orleans, has located at Marion, Va., for the practice of his profession.

Dr. K. T. Redfield,

For several years superintendent of Jefferson Hospital, Roanoke, Va., was recently appointed superintendent of Protestant Hospital, Norfolk, Va., and entered upon his duties there the first of May. He fills the vacancy caused by the death of Dr. James H. Culpepper, a little more than a year ago.

Deaths of Physicians in 1933.

There were 3,354 obituaries published in the *Journal of the American Medical Association* during 1933. Of this number, 3,209 were from the United States. The average age at death of those classified as of the United States was 64.4. Heart disease was again the leading cause, with 1,131 fatalities as compared with 1,101 for 1932. Cerebral hemorrhage was the second most frequent cause reported. Pneumonia, cancer, and arteriosclerosis follow in the order named. One hundred and forty-eight physicians died as the result of accidents, automobile accidents accounting for seventy-five. Suicide was the cause of seventy deaths in 1933, seventeen less than in 1932. There were fourteen homicides.

A full report of these deaths may be obtained from the April 21st issue of the *J. A. M. A.*

Dr. Douglas VanderHoof,

Of Richmond, Va., was recently elected president of the Dartmouth College Alumni Association of this city.

Dr. William Reese,

Petersburg, has been elected exalted ruler of the Petersburg Elks Lodge.

Rotary Officers.

Dr. Charles Outland was recently elected a member of the Board of Directors of the Richmond Rotary Club.

Dr. B. B. Dutton was elected vice-president at a recent meeting of the Winchester Rotary Club.

American Medical Association Meeting.

This is just a reminder of the annual meeting, to be held in Cleveland, June 11th-15th, under the presidency of Dr. Dean Lewis, of Baltimore. The House of Delegates will convene on Monday, June 11th, and the scientific assembly of the Association will open with the General Meeting on Tuesday, June 12th. The various sections will begin their meetings on the 13th.

Dr. John Robertson,

Onancock, Va., addressed the May meeting of the Accomack Community League, May 10th, his subject being "Working for Dear Life."

Leslie Dana Gold Medal.

This medal, awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision, was presented Dr. F. de Lapersonne, noted French ophthalmologist and president of the International Association for Prevention of Blindness, at the annual meeting of the Association held in Paris, May 14th. Dr. Lapersonne is the second European to be awarded this recognition.

Graduate Nurses' Association of Virginia.

At the annual convention of this Association, held at Virginia Beach, Va., in May, the following officers were elected: Miss Frances Helen Ziegler, Richmond, president; Miss Nina D. Gage, Hampton, and Miss Mary I. Martin, Richmond, vice-presidents, and Mrs. Jessie Wetzel Faris, Richmond, secretary-treasurer. Miss Blanche F. Webb, Norfolk, was elected a member of the Board of Directors.

Dr. Clarence W. Trexler,

Honolulu, Hawaii, has been appointed as medical examiner for Aeronautics Branch of the Department of Commerce in Honolulu. He will examine all civilian air pilots. Dr. Trexler is a graduate of the University of Virginia, class of '26.

The American Proctologic Society

Will hold its annual meeting in Cleveland, June 11th-12th, under the presidency of Dr. Curtis C. Meckling, Pittsburgh, Pa. The scientific program is made up of many interesting and instructive papers.

Information with regard to this meeting may be obtained from the secretary, Dr. Frank G. Runyeon, 1361 Perkiomen Ave., Reading, Pa.

Dr. John M. Love,

Formerly stationed at Walla Walla, Wash., has been transferred to the U. S. Veteran's Administration Faculty, Fort Bayard, N. M. He is a native Virginian and has been a member of the Medical Society of Virginia for twenty-five years.

Hebrew University in Jerusalem.

A trust fund of approximately $200,000 has been created by anonymous donors to be used over a period of ten years for the establishment and maintenance of a department at the Hebrew University for research into the causes and cure of cancer, according to an announcement made by Dr. Judah L. Magnes, Chancellor of the Hebrew University in Jerusalem.

The University proposes to begin its work in cancer research in those fields in which the material at hand is sufficient to place the laboratories on a level with similar scientific institutions in Europe and America. The plan worked out provides for research in radio-biology, physiological chemistry and the study of cells and tissues.

Unusual Opening:

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Obituary Record

Dr. George Paul LaRoque,

Prominent surgeon of Richmond, Va., died suddenly May 16th, while leaving a train in Cincinnati where he had gone to attend a meeting. He was born in Kinston, N. C., and was 57 years of age. Dr. LaRoque received his medical degree from the University of Pennsylvania in 1902, and had made his home in Richmond for nearly thirty years. At the time of his death Dr. LaRoque was professor of clinical surgery at the Medical College of Virginia, and was exceedingly popular with the student body at the College. He had been a member of the Medical Society of Virginia for twenty-nine years. His wife and two brothers survive him.

Dr. William Francis Cooper,

Newport News, Va., who retired from active practice only a few months ago, died in that city on May 20th. Dr. Cooper was a native of Warrenton, Va., and seventy-eight years of age. He studied medicine at the University of Virginia and Bellevue Hospital Medical College of New York, graduating from the last named in 1879. He had been a member of the Medical Society of Virginia since that same year and served a term as vice-president of the Society.

Dr. John Marsham Ropp,

Roanoke, Va., died April 29th, as a result of injuries received in an automobile accident. He was sixty-seven years of age. Dr. Ropp received medical degrees from the Vanderbilt University, Tenn., in 1891, and from the University of Nashville in 1892. He had been a member of the Medical Society of Virginia for thirty years.

Dr. Thomas Scott Hening,

Well-known physician of Powhatan County, Va., died April 29th at his home near Maidens. He was 61 years of age and a graduate of the Medical College of Virginia in 1894. Dr. Hening was a member of the State Senate from 1916 to 1924, and was formerly a member of the Medical Society of Virginia. His wife and three children survive him.

Dr. William Henry Welch,

One of the most beloved and renowned medical men of this country, died at the Johns Hopkins Hospital, Baltimore, April 30th. He was born in Norfolk, Conn., in 1850, and received his medical degree from the College of Physicians and Surgeons of New York, in 1875. Dr. Welch was one of the five members of the original Johns Hopkins Medical School faculty and held the first professorship of pathology at that school. He was a past president of the American Medical Association and had served on a number of national and international boards. As evidence of the esteem in which he was held, Dr. Welch's eightieth birthday was honored with an international celebration.



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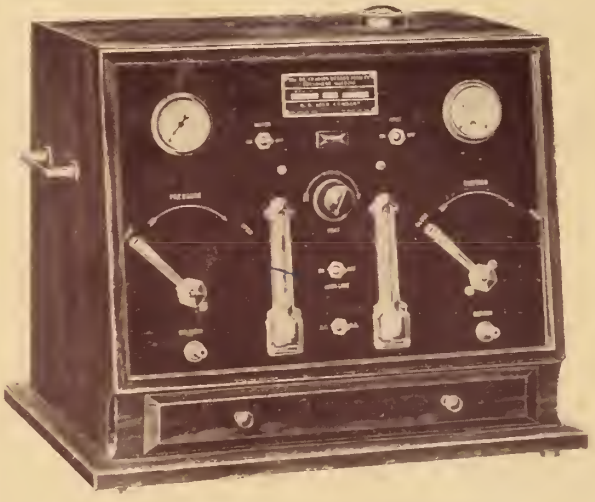
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Sixty-Fifth Annual Meeting, Medical Society of Virginia, Alexandria, October 9-11, 1934

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RICHMOND, VA., JULY, 1934

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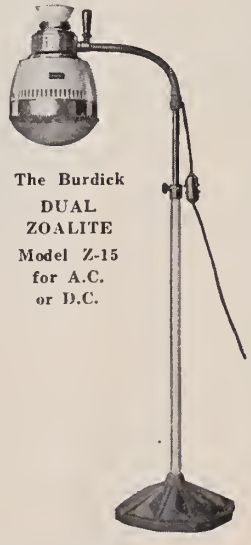
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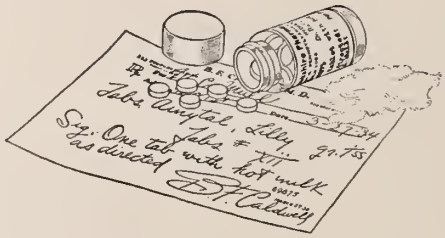
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CHIMBORAZO HOSPITAL, CONFEDERATE STATES ARMY, AMERICA'S LARGEST MILITARY HOSPITAL.

Major Edgar Erskine Hume, Medical Corps, U. S. Army,
Washington, D. C.

The honor of speaking on this historic occasion is one which any Southern man would appreciate. It is also to me a privilege because, a military surgeon myself, I am at present the Librarian of the Army Medical Library in Washington, the largest medical library in the world, an institution which from 1904 to 1913 was directed by Brigadier-General Walter Drew McCaw, the distinguished son of the founder of the Chimborazo Hospital. As it fell to my lot during the World War to have charge of the hospitals of the United States Army in the Italian War Zone, I know something of what it means to conduct an institution of this kind, though under the conditions of the World War with no shortage of supplies, equipment or personnel, I can sense only at a most respectful distance, the difficulties under which the Chimborazo Hospital functioned so efficiently.

The site of the Chimborazo Hospital, here on an elevated plateau above *Jeemses River,* as I am sure most of its inmates called it, was well chosen. It was separated from the city of Richmond by Bloody Run Creek, a significant name given it by the Indians in Colonial days. It came into being in 1862 when General Joseph E. Johnston reported to the War Department that with the enemy's move in force on Bull Run, some nine thousand men would have to be sent back to Richmond. The distinguished Surgeon General of the Confederate States Army, Dr. Samuel Preston Moore, a former officer of the regular United States Army, knew to whom to turn in the emergency. He went at once to see Dr. James Brown McCaw, one of the most noted of Richmond's physicians. Dr. McCaw was already in his country's service, having early in the war joined a company of cavalry. But a greater duty lay before him, and unhesitatingly he assumed the great task.

He selected the site and with almost unbelievable speed, the hospital was made ready to receive patients. At the time of General Johnston's warning to the Surgeon General, that officer had only 2,500 beds at his disposal. To be ready to receive 9,000 and probably many more patients within a brief period required great skill in administration and organization. Surgeon General Moore and Surgeon McCaw had these qualities. Work began immediately, and 150 wooden buildings were completed. These were, of course, not all set up at once, but, as is usual in war-time construction, as fast as needed and as fast as materials and workmen could be supplied. It must not be supposed that the entire construction of the Chimborazo Hospital was completed in a few days' time. The buildings had in many cases merely to be remodeled, for they had been constructed as winter quarters for the Army of Northern Virginia, but the enemy's drive on Richmond forced the Confederate Army to fight the winter out at Manassas.

The buildings measured approximately 100 feet in length by 30 feet in width. They were of one story, seven feet, in height. Each building had ten windows. From forty to sixty patients were accommodated in each building.

Not only were the buildings themselves airy, but were not placed too near together and ample space for drives and walks was allowed. Realizing the necessity for proper ventilation, the Commandant ordered an allowance of approximately 800 to 1,000 cubic feet of air space per patient, and that attendants and others be not permitted to sleep in the

wards, for they would in that way have reduced the amount of fresh air available to each patient. The prevailing breeze from the Southwest from the near-by woodlands was always a source of comfort. This regulation is exactly what we required in the World War during the epidemic of influenza.

In addition to the 150 hospital buildings, the post included 100 Sibley tents in which eight to ten convalescent men could be quartered. These tents were spread upon the slope of the hill.

"The hospitals," wrote Surgeon John R. Gildersleeve, C. S. A., "presented the appearance of a large town, imposing and attractive, with its alignment of buildings kept whitened with lime, streets and alleys always clean, and with its situation on such an elevated point, it commanded a grand, magnificent, and pleasing view of the surrounding country for many miles." In the first week two thousand patients were received, and in two weeks' time there were in all four thousand.

The site was well chosen and had an ample supply of good water. There was natural drainage on the east, south and west. There were five large ice houses, Russian bath-houses, and adequate provision for the disposal of wastes. Dr. McCaw profited by the hard lessons learned in the first year of the war when there was general confusion and the belief that the war would be a brief duration. He stressed the importance of cleanliness and that the mental attitude of the patient had much to do with his recovery.

The Secretary of War saw the desirability of having the Chimborazo Hospital function as a unit, free from the usual army routine. To accomplish this he made the institution and its grounds an independent army post, with Surgeon McCaw as Commandant. An officer of the line and thirty men were stationed there to assist him in maintaining discipline. There being no precedent for such a military post, the Secretary of War was somewhat perplexed about a suitable name for the station itself and title for its commanding officer, who was not an officer of the regular Confederate States Army. At Dr. McCaw's suggestion the institution was given the name *Chimborazo* from that of the hill where it stood, and its director, Surgeon McCaw, called *Commandant* and *Medical Director-in-Chief*. Dr. McCaw held this position during the whole existence of the hospital.

The Chimborazo Hospital, or, as we should in modern military terms call it, "The Chimborazo Hospital Centre," was built and operated not only in accordance with the best medical opinion of that day, but it will bear comparison with large military hospital centres even of the World War.



Chimborazo Hospital, Richmond, Virginia.

The hospital centre, using the modern term, consisted of five separate hospitals or divisions, thirty wards or buildings to each. A surgeon was in charge of each of the five divisions, with assistant surgeons or acting assistant surgeons in charge of the several wards or buildings. When the wounded were first brought in, soldiers were assigned to vacant beds without regard to their homes or their military organizations. Later separate divisions were appropriated to men from different sections of the country. Schedules showing where patients from

different states were quartered were published in the Richmond newspapers. This made it possible for State and private organizations to send supplies to their men and supplement those received from the Government. This organization of the hospital upon a geographical basis proved an effective means of keeping up morale. Many of the wounded and ill men were thus treated by their regular family physicians or others of whom they had heard or known. The value of this system in a provisional government with slender resources must be realized.

In the conduct of the Chimborazo Hospital the director bore in mind the fact, often overlooked by Northern historians, that the number of men of the upper classes of the South serving in the ranks was great. The division of the hospital into wards and larger units for those of each local community was appreciated by such men.

There is something inspiring about a military hospital. Any hospital demands our respect as an institution dedicated to the relief of suffering, to the restoration to health, to the demonstration of highest Christian ideals. But a military hospital is more. Here are treated not only those who have fallen victims to disease such as might occur at any place and at any time, but also those who have been but recently in the best of health but who suddenly have been stricken down by a man-made agent of destruction. They have of their own accord gone to the scene of danger borne along by idealism, by love of country, by unselfishness. In a military hospital the patients are all men—mostly young men, and in this lies the most heartbreaking cruelty of war. Schiller has said: *Der Krieg verschlingt die Besten*—war strikes down the best. And so it seems, though in the words of the Spartan, "The arrow would be of great price if it distinguished brave men from cowards." The best of the land are offered on the altar of patriotism, and even in a hospital as admirably conducted as the Chimborazo Hospital, many cannot recover. They die; they pass on to the great beyond, endowed with the grateful love of the nation which bore them. But they have something more. They are endowed with immortal youth. No matter how long parents live, their boy who has made the supreme sacrifice will never grow old to them. Had he and they lived together for a few decades, the youth would have become an old man. But once he has given his life for his country, he passes from the Realm over which Time holds sway, and he knows not decay nor decline. He enters Eternity and remains forever a youth.

As soon as the hospitals were opened, the large tobacco factories of the Grants, Mayos, and others were secured, their trade being practically at an end for the period of the war. The great boilers from these factories were effectively used in making soup in the kitchens. The factory workers were employed in the construction not only of the hospital buildings but also furniture and other equipment for them. There being, at least at first, no shortage of seasoned wood, for the tobacco factories had a large supply intended for the making of crates and packing cases, serviceable beds and other articles were made by the carpenters.

The patriotic Mr. Franklin Stearns lent the hospital his celebrated farm *Tree Hill* for the pasteurage of 200 cows and 300 to 500 goats. The latter supplied kid venison, a meat popular with the patients. A large bakery was kept in almost constant operation, having the capacity of 7,000 to 10,000 loaves daily, though even this quantity proved insufficient to insure one loaf per man per day. The grease from the "soup houses" was saved and lye brought through the blockade when possible, so that soap could be made. Beer was made on a large scale. As much as 400 kegs were brewed at a time, and stored in the caves or cellars at the eastern end of the hill.

To us who witnessed the expenditures of enormous sums of money in the construction and maintenance of military hospitals during the World War, it is a source of wonder and of admiration to read that no funds were drawn from the Confederate State Government for the conduct of the Chimborazo Hospital. The institution was entirely maintained by the commutation of rations. It had its own subsistence department, and possessed a canal boat, the *Chimborazo,* which under the command of Lawrence Lottier, plied between Richmond, Lynchburg and Lexington, bartering yarn, shoes, etc., for provisions. This was but one of the many resources of the hospital. At the close of the war the Confederate Government owed the hospital $300,000 which Mr. Memminger, the Secretary of the Treasury of the Confederate States, agreed to

pay in gold on March 29, 1865. On April 3rd, the city surrendered.

At the time of the War between the States the Chimborazo Hospital was the first military hospital in point of size in the world. The second largest was the *Lincoln Hospital* in Washington. The total number of patients received and treated in the Chimborazo Hospital was 76,000, of whom 17,000 were wounded soldiers. The Lincoln Hospital reported a total number of 46,000 patients. The *Scutari Hospital* in the Crimean War was the largest prior to the War of 1861-5. It reported a total of 30,000 to 40,000 patients.

The enormous work of the Chimborazo Hospital may be realized, somewhat, in the light of the experience of the United States Army in the World War. The Justice Hospital Centre at Toul, France, which was the largest in the American Expeditionary Forces, treated in all 67,866 patients up to the time of its closing at the end of March, 1919. It is interesting to recall that one of the eight base hospitals constituting this centre, was Base Hospital No. 45, organized at the Medical College of Virginia and commanded by Lieutenant-Colonel Stuart McGuire, U. S. A., son of Surgeon Hunter Holmes McGuire, C. S. A. of General Jackson's staff.

Even though we consider the shorter time of America's participation in the World War, we must likewise remember the enormously increased killing and wounding power of modern weapons and also the ravages of the pandemic of influenza. Truly great was Chimborazo, to this day America's largest military hospital.

Because of the destruction by fire in 1865 of the records of the Surgeon General's office, we cannot give the names of all of the medical officers, averaging forty-five in number, who labored for the relief of their countrymen at the Chimborazo, nor of the devoted nurses and the forty-five matrons whose skill and untiring energy made its success possible. We can give only the names of the chiefs:

Commandant and Medical Director-in-Chief:
Surgeon James Brown McCaw.
In charge of the First Division (Virginia):
Surgeon P. F. Browne, of Accomac, Virginia.
In charge of the Second Division (Georgia):
Surgeon S. E. Habersham, of Augusta, Georgia.
In charge of the Third Division (North Carlonia):
Surgeon E. Harvie Smith.
In charge of the Fourth Division (Alabama):
Surgeon S. N. Davis.
In charge of the Fifth Division (South Carolina):
Surgeon E. M. Seabrook, of Charleston.
Chief Matron: Mrs. Minge (wife of a physician).
Commissary: John Herbert Claiborne.
Quartermaster: Colonel A. S. Buford.
Chaplain: Rev. Mr. Patterson.

There were in all two apothecaries, one clerk, and one general wardmaster or assistant steward. Each division had a chief matron with three or four assistants.

"The duty of the matron," wrote Surgeon S. E. Habersham, in charge of the Second Division, "was to superintend the preparation of all the diets for the sick not convalescent, and supply it upon the requisitions furnished by the assistant surgeon of each ward; to take charge of the laundry department and see that the wards were supplied with clean bedding, etc." These women rendered most valuable services.



DR. JAMES B. McCAW,
Commandant and Medical Director-in-Chief, Chimborazo Hospital.

The task of feeding the large group of patients has been graphically told by Mrs. Phoebe Yates Pember, one of the matrons at the Chimborazo Hospital. The men were fed from the general kitchen with special provision for the preparation of special

diets for about six hundred patients in need of such care. These patients were fed from the "matron's diet list," as it was called. The ones who were in the most dangerous condition were fed from the matron's' own kitchen.

As supplies became more and more scarce by the summer of 1864, the men in the ranks were always hungry. Fighting men had to be denied in order that their stricken comrades might be fed. The hospital matrons had a most difficult task to be just to all. No articles of food were wasted, and Mrs. Pember even gives a receipt for cooking rats, which she says she learned from men who had had experience. Fortunately the patients in the Chimborazo Hospital never had to be fed on such delicacies.

The conduct of the Chimborazo Hospital may fairly be called one of more noteworthy achievements in military medicine in America's history. When we consider its size, the number of soldiers admitted as patients, its successful work for four years, its excellent discipline, the tremendous difficulties that had to be overcome in the procurement of supplies, especially toward the closing days of the Confederacy, the comparatively low mortality (slightly over 9 per cent), we must recognize its director as a genius of first rank.

Despite the loss of so many of the Confederate medical records in the fire in Richmond in 1865, Surgeon S. E. Habersham, of Augusta, has left us some valuable statistics of the Chimborazo Hospital for the period October 10, 1861, to November 1, 1863. By divisions we have the name of the disease or injury, number treated, and the number of deaths. As we read today the names of the maladies, we realize the advancements in medical science, for many of the terms used are all but unknown now. Dr. Habersham concludes that the most serious diseases were: *Adynamic fevers, sloughing phagedæna, phagedæna, gangrenosa, pyæmia, erysipelas,* and the *neuralgic affections following continued fever.*

Dr. McCaw, the director of the hospital, demonstrated the truth of Osler's dictum: "Work is the master word in medicine." "Towering physically and mentally above his associates," says one of his admirers, "princely Dr. James B. McCaw, sweet, gentle, tender and true, and brave, generous and loyal, he was just, honorable and upright, an exemplar worthy of emulation."

He came of a family of physicians. The first of his name, Dr. James McCaw, of Newton-Stewart, Wigtonshire, Scotland, came to live at Norfolk, Virginia, in 1771, practicing surgery. He was commissioned a Captain by Lord Dunmore and was present at the *Battle of the Bridge.* But like some others who remained loyal to the Mother Country in the American War of Independence, his house was plundered and destroyed by revolutionists, and he was, with his family, compelled to take refuge on board a British ship in Chesapeake Bay. He took his family to Scotland but returned to America and died in New York, still in British hands, in 1778.

His son was Dr. James Drew McCaw, born in Virginia, apprentice in surgery to Benjamin Bell, of Edinburgh, where he received his M. D. in 1792, and returned to Virginia to practice his profession until his death in 1846. He had two sons who were physicians, Dr. William Reid McCaw and Dr. David McCaw. The former of these was the father of Surgeon James Brown McCaw, the Commandant of the Chimborazo Hospital.

Surgeon James Brown McCaw was born in Richmond on July 12, 1823; studied under Dr. Valentine Mott who first successfully ligated the Innominate Artery; graduated a Doctor of Medicine at the University of the city of New York in 1844; and practiced his profession in Richmond for fifty-seven years, retiring in 1901. He was for twelve years, ending in 1872, Professor of Chemistry in the Medical College of Virginia, and for the next sixteen years was Professor of the Practice of Medicine and Dean of that institution. From 1853 to 1861 he was Editor of the *Virginia Medical and Surgical Journal.* From 1864 to 1865 he was Editor of the *Confederate States Medical and Surgical Journal,* the only medical journal in the South during this period, fourteen issues having appeared in all. In April, 1871, he became one of the editors of the *Virginia Clinical Record.* He wrote many medical papers on many subjects, publishing them chiefly in the journals which he edited. A lover of music, he was President of the Mozart Society of Richmond, and was a charter member of the Medical Society of Virginia (1870). He was called "A typical Virginia gentleman of the old school, and the beloved physician of three generations." He must have had what President Eliot, of Harvard, called "the durable satisfactions of life." As three

of his sons became physicians, Dr. Walter Drew McCaw, Dr. James Henry McCaw, and Dr. David McCaw, they represent the fifth generation of this distinguished medical family, while Dr. James McCaw Tompkins, of Richmond, represents the sixth generation. Dr. Walter Drew McCaw became a military surgeon himself, rising after a long career of usefulness to the rank of Brigadier-General. He was Chief Surgeon of the American Expeditionary Forces and of course had under his direction the many large hospitals established by the United States Army overseas. His citation for the Distinguished Service Medal states that "as Chief Surgeon of the American Expeditionary Forces, he maintained the splendid efficiency of that department at a critical time and solved each new problem presented with wisdom and marked ability." His father's mantle descended upon him indeed.

Surgeon J. R. Gildersleeve, C. S. A., a member of the staff of the Chimborazo Hospital, has left an interesting account of the circumstances surrounding the surrender of the Chimborazo Hospital when Richmond was occupied in 1865:

> "General Godfrey Weitzel's brigade of the Federal Army was in the van of the advancing army. The General rode up to the hill, and when he came through the post he was received by our whole corps of officers in full dress uniform. Dr. Alexander Mott [of New York, Surgeon of Volunteers], chief medical director of the staff of General Weitzel, exclaimed:
>
> "'Ain't that old Jim McCaw?'
>
> "'Yes,' said Dr. McCaw, 'And don't you want a drink?'
>
> "Mott's answer was, 'Yes,' and he added, 'the General will take one too, if you will ask him.'
>
> "The invitation was duly extended and accepted."

General Weitzel gave a free pass to the Commandant of the Chimborazo Hospital for himself and all of his officers, and ordered that all Confederate patients in the hospital be taken care of under all circumstances. Surgeon Gildersleeve tells us that the General even offered to place the Commandant in the general service of the United States, so that he might issue requisitions, etc., and have them honored in the same way as those of any other Medical Director in the United States Army. General Lee not having surrendered. Dr. McCaw respectfully declined this generous offer, but voluntarily continued to perform all of the duties incident to the position that he held.

Thus with scant medical supplies, for they were contraband of war, and poor facilities, the Chimborazo Hospital had been administered for three years with outstanding success and with a remarkable ratio of recoveries. It was at last turned over to the Federal troops in perfect working order, and they were not slow in giving credit where credit was due.

Dr. McCaw knew how to thwart fear and engender courage. He had the deep religious feelings which characterized the leaders of the Southern cause, and without a knowledge of which it is impossible to understand the war. "A soldier without religion," said a Prussian officer, who knew the Confederate as well as the Prussian Army, "is an instrument without value." Even the rank and file were in full accord with the great principles of the war, and were sustained by the abiding conviction of the justice of their cause.

"No one can bring a tribute of words into the presence of great deeds, or try with them to embellish the memory of any inspiring achievement, without feeling and leaving with others a sense of their insufficiency" (Oliver Wendell Holmes). We cannot do more than to mark the place where this great instrument of mercy stood, where a group of faithful men and women of our South did their utmost to repair war's broken victims, where in so doing they enabled many of the men to return to their commands and strike yet other blows in defense of their invaded country.

Nor Mars his sword nor wars quick fire shall burn
The living record of your memory.
'Gainst death and all-oblivious enmity
Shall you pace forth; your praise shall still find room
Even in the eyes of all posterity.

—Shakespeare, *Sonnets*, LV.

AUTHOR'S NOTE—This address was to have been delivered by the author on May 26, 1934, at the unveiling of the bronze tablet marking the site of the Chimborazo Hospital. On account of illness in his family, the author could not be present so that the manuscript was read by Dr. Greer Baughman, of Richmond. Miss Sally Archer Anderson, President of the Confederate Memorial Literary Society, presided and Miss Littleton Fitzgerald, chairman of the sites committee presented Dr. Baughman. The marker was received on behalf of

the city of Richmond by Colonel R. Keith Compton, director of public works. Mrs. Dabney H. Maury, daughter of Dr. James B. McCaw, Commandant of the Chimborazo Hospital, unveiled the tablet which was covered with a battle flag and a hospital flag of the Conderate States Army captured during the war, and returned to Virginia by act of Congress.

The tablet, attached to a waterworn boulder on Chimborazo Hill, is inscribed:

On this Hill Stood
CHIMBORAZO HOSPITAL
1862 — 1865
Established by
Surgeon General S. P. Moore, C. S. A.
Directed by Dr. James B. McCaw

At That Time it was the
Largest Military Hospital in the World
It Consisted of 150 Buildings and 100 Tents
And Cared for 76,000 Patients with a
Mortality of Less Than 10 Per Cent

This Tablet is Placed by the
Confederate Memorial Literary Society.

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A DISCUSSION OF THE ETIOLOGY, PATHOLOGY AND TREATMENT OF THE PRESENT STATE OF GENERAL PRACTICE.*

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This paper is not a wail or a complaint against the fate of the general practitioner but is an attempt to study its condition, to investigate its etiology and pathology, and, if possible, suggest therapeutic measures that may arouse it from its coma and bring it back to a state where it can be of service in the medical sphere.

There was a time, even in the memory of some of us here, when the general practitioner was the doctor. He occupied an outstanding position in the community. He was known and loved by all; he was not only its medical advisor, but he was the friend of all his clientele. His patients looked on him as a man apart; he was the servant of the people in the best sense of the idea. And even in medical circles he was dominant. There were a few medical men who were limiting their practice, mainly in the fields of eye, ear, nose and throat, but the medical man of the day, the man of medical influence and the man whose power was felt in the profession was the general practitioner of medicine.

In the past generation, however, a great change has taken place. The family doctor no longer holds the position he once had. He has fallen from his state of eminent domain and is no longer looked upon with respect and admiration, either by the profession or by the public at large. He has lost his influence and his opinion is not sought. The profession has adopted a compromising attitude towards him and the people have lost their confidence in him. Not only this, but he has lost confidence in himself and has developed an inferiority complex that he finds difficult to overcome. The result is that but few of those who have gone through the grind of a present day medical course are will-

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ing to join the ranks of the general practitioner who has so ignobly fallen from his high estate and is wallowing in the slough of despond of lack of confidence of the public, lack of confidence in himself and of financial dependency. And so the general practitioner bids fair to become a dodo, defined in the cross-word puzzle as an extinct animal.

Pathologically we might state then that general practice shows marked evidences of degeneration—there is loss of connective tissue, the cells appear inactive, the nuclei are faded. No inflammatory exudates are found and there seems to be no attempt at regeneration.

What are the causes of this tremendous change? Undoubtedly the most influential factor has been that as medical problems were studied no one man could follow them all to their conclusion. It became necessary for men to devote all or most of their time to the study of certain phases of a subject. New discoveries demanded more time and more study and suggested other fields of investigation which occupied the entire time and thought and study of other workers. These investigators added greatly to the store of medical knowledge and were looked upon with high esteem by their confreres. Their results were studied and eagerly taken up by the profession and medical practice was greatly advanced as a result of the special work of these men. Their services were in great demand and, as was very right and proper, they asked and received greater compensation, and this was the beginning of what we now call specialism. Such specialists are needed in every branch of medicine—men who, by intense application and close study, have become masters of their chosen branches. It is from them that most of the advances have come, and it is to them that we look for new developments. Not only in research but in practice as well specialists are needed. Some cases are more difficult to diagnose and require a refinement of detail and of technique that the average medical man does not have the time to give, and such cases should be given the services of a specialist.

Thus specialism was a great boon to the practice of medicine. It not only widened the scope of our knowledge but it has greatly improved and raised to a higher standard both diagnosis and treatment of disease. Due credit was given these men both by the profession and by the laity and they received the plaudits of their colleagues, and financial reward in the form of large fees from their patients. Such a state of affairs was right and wholesome, but, like so many things, soon began to have untoward results. The public, not capable of judging when the services of a specialist were needed, rushed to him for all conditions and this chance of greater fees and greater prestige gave invitation to all sorts of men to go into this field and call themselves specialists. Without the training or background of research and scientific application and experience necessary to make them experts in their lines, they took on a thin veneer and posed before the public as specialists, and there has yet been no way devised to curb them. The only qualifications they have as specialists are that they limit their practice to some certain branch and charge high fees. The patient is led to believe that only the specialist is qualified to practice medicine and that the general practitioner has no place in the profession other than as a guidepost to direct his patients to the so-called specialists. The fact that a headache may be due to a brain tumor is emphasized so that a man with a headache does not feel easy until he has consulted a neurologist, who by lumbar puncture, encephalogram and X-ray makes the astounding discovery that the headache is due to constipation and the neurologist is due fifty dollars!

Undoubtedly specialists with their high fees have been in no small degree responsible for the increased cost of medical care about which we hear so much now and which is causing a widespread dissatisfaction with the medical profession and is driving people to the various cults. Unnecessary examinations have been multiplied to an alarming extent and the ability of the specialist is gauged, in no small degree, by the number of tests that are made. Non-protein nitrogen, basal metabolism, electro-cardiograms and other such tests have their places, and very useful places, but it is neither necessary nor wise to add the expense of such tests routinely, or where there is no indication for them.

An elderly lady of about seventy went to a nearby city to consult an orthopedist about shoes for her fallen arches. Otherwise she was in good health, but she was advised by the orthopedist to have herself checked over. She was X-rayed—head, chest and gastrointestinal tract—she was examined by eye specialists, ear specialists, nose and throat specialists, by urologists, by internists, by gynecologists, and

by psychiatrists, and the diagnosis was that she had a mild arteriosclerosis and presbyopia, and her bill was over five hundred dollars. This is but an illustration of the custom of many clinics. The great number of specialists makes it imperative that the examination be divided and subdivided so as to give each specialist a part, and thus unnecessary examinations are multiplied.

Reverting to technical terms, we might say that the exciting cause of this condition in which general practice finds itself is Bacillus Specialis, a slender rod-shaped organism of small diameter, showing a tendency to expand or dilate at the upper pole, grows very rapidly on all media, takes gold or silver stain very readily and the thicker the gold or silver stain the better it shows off.

What is the treatment and how can general practice be restored to its right and proper place in medicine? Of course it stands to reason that there should be some curb to specialism. The profession, as well as the public, should be protected against the great swarm of unnecessary, poorly prepared and money-minded specialists, and some steps will probably be taken in that line either by organized medicine or by the state examining boards.

But the real remedy must come from within the ranks of the men who comprise the great group of general practitioners. The general practitioner should realize that the status in which he finds himself is to no small degree his own fault and that it is himself he has to fight. His discouragement has let him sink into mediocrity, and, as a result, he has not kept abreast with medical progress. Being on call for twenty-four hours every day makes it hard for the general practitioner to do regular systematic reading, but there is little or no reason why the average doctor should not keep abreast with the general advances in medicine. A comparatively few hours' reading each month will keep him in touch, not with all the experiments under way, but with those advances which are of proved benefit and which could be utilized by him.

Attendance on medical meetings and post-graduate clinics will bring helpful suggestions, and contact and personal conversation with the leading men of the profession are of great help and inspire him to better work. Medicine is not a game of solitaire, and no man who tries to play a lone hand will make a success of it. One of the fundamental tenets of our profession is that any new discoveries which are of proved value shall be made available to all members of the profession, and, if the general practitioner is to help himself, he must not be slow to acquaint himself with such discoveries and improvements.

But he should study not only the work of others; he should review his own work, and this can be done only when he keeps records, which do not have to be voluminous, but should be sufficient to give him a clear idea of the progress of his cases. It is impossible to remember the details of his cases unless he has notes of them, and such records not only help him, but raise him in the estimation of his patients.

It is freely admitted in the best medical circles that the general practitioner should be able to take care of 85 to 90 per cent of all the work that comes to him. It is a duty he owes his patient as well as himself to do all he can for his patient without calling in outside help, but he must be honest and conscientious about calling consultation or referring cases to which he cannot do full justice. The accurate balancing of these two things constitute the formula for a healthy, conscientious and successful general practice. The man who is unwilling to call in help when he needs it is unworthy and should have no standing in the profession. He is unsafe; he is unfaithful to the trust that has been put in him by his patient; he is dishonest.

But there is another point that cannot be too strongly emphasized, and that is, that where we, as general practitioners, fail to diagnose a case and the specialist succeeds, in nine cases out of ten it is due, not to greater knowledge or ability on the part of the specialist, but to the fact that the general practitioner has not made a thorough and systematic examination of the patient. Several years ago the writer of this paper was attending a man who had been tubercular and was complaining of pain in the lower chest. An examination was carefully made of the chest and abdomen and a faint pleural rub and slightly palpable liver were found. The chest was strapped but this gave but little relief as did also application of heat. The case went on and the pain increased. The *chest* was repeatedly examined but nothing was found to explain the symptoms. As he had pyorrhea a dentist was called in and the teeth were removed. But this gave no

relief and, after several months, as the patient was definitely losing ground, it was decided to call a specialist in consultation. He bared the patient's chest *and* abdomen and then, before he touched the patient, nodules on the liver were easily visible and it was evident that the patient had a carcinoma of the liver, which had not been diagnosed because he had not been carefully examined for several months. The fact that nothing could have been done did not relieve the embarrassment of the attending physician, and he was not surprised when he lost the practice of that family, for he knew that he had not been careful and thorough in his work. It did not require any special ability to make the diagnosis, but it did need a careful examination. It requires no great skill to detect rales or breath changes in the patient who is run down or losing weight, but it does require a painstaking and thorough history and chest examination. Many cases of pyelitis, otitis media and early malignancies of the prostate are undiscovered only because they are not looked for, and every general practitioner *can* make microscopic urine, otoscopic and rectal examinations. The specialist leaves no stone unturned in his examination and, if the general practitioner is to come into his own, if he is to do his duty to himself and his patient, he too must make a thorough examination, and in long-standing cases these must be made repeatedly.

When the public sees the general practitioner reach the stage where he is doing thorough, careful, conscientious work, when it sees that he has acquainted himself with and is making use of improved methods, and when it sees that he is honest and conscientious about calling in help in that small percentage of cases where the services of a specialist are needed, it will not be slow to call on him and to use him, and the general practitioner will come back into his own.

The general practitioner must throw off his lethargy and substitute for his inferiority complex an aggressive attitude. He should realize that he has the most important place in medicine, for it is through him, and not through the specialist, that the problem of tuberculosis can be overcome by detecting the incipient cases; it is through his influence with the parents that the pre-school children can be protected against diphtheria; and so on through many of the great medical problems that confront us. He has a positive job and should be up and doing.

In brief, then, the treatment of the state in which general practice finds itself lies with the general practitioner himself. He should—

1. Keep abreast with proved advance in medical science by systematic reading, by attending medical meetings and clinics, and by contact with other members of the profession.

2. Keep records that will enable him to study his own cases.

3. Do all he can for his patient without calling in outside help, but be always ready to call consultation when the exigencies of the case demand it.

4. Make thorough, careful, and repeated examinations of each case that comes before him.

DISCUSSION

DR. R. L. PAGE, Batesville: I have listened with a great deal of pleasure and edification to Dr. Daniel's paper on this subject, which is a very, very acute subject. The remarks that I shall have to make will be in the light of the country practitioner, as forty-nine years of my life have been spent in that work and I have received some impressions, as you may very readily imagine.

I have seen wonderful advances made in the practice of medicine and in the care of the sick. When I first hung up my shingle in the country, to practice, I had a diploma from one of the large Northern colleges, and I was supposed to know all of medicine. I knew I did not, even the medicine of that day. Since that time such wonderful strides have been made that it has been difficult to keep even in sight of the various improvements and new theories and new light that we have gotten on the various diseases with which we come in contact. I admit, with Dr. Daniel, that at that time the country practitioner, or the general practitioner, as he is spoken of today, was highly considered. His word was law; it was accepted as the truth, whether it was the truth, or not; and I am sorry to say that in a great many instances it was not the truth. He may have been honest in thinking so himself, but he was mistaken. But conditions have changed, as we all know; and this change is something that is going on all the time. We can trace it as far back as we can trace the human race and its development. We get new light with the growth of time; we get new developments. There is a trait inherent in the human animal that we see exemplified in the lower animals; and that is the idea of going forward. We want to see what is on the other side. We who live in the country and have some knowledge of domestic animals, know that if we turn a cow or a horse into the pasture, while there may be beautiful

grass or clover at the bars, as soon as we put them in there they will take a nip of this and a nip of that bunch of grass, and look up and see something farther off that looks better, and in a short time you will see them at the very end of the pasture, on probably very short, stubby grass. They have left the best at the beginning.

Now, in the way of medical practice, the doctor who lives in another town or lives in a village or larger city, or the country, thinks that the one who lives in the city is more proficient than the one who lives in the country. Probably the man who lives in the village thinks there are better doctors in the larger town. They just go higher and higher, thinking they can find something better. I do not think the fault has been all in the general practitioner's letting down. Dr. Daniel spoke of the inferiority complex of the general practitioner of today. I do not think the young man who starts out in general practice is afflicted with an inferiority complex; it has been my experience, in my contact with them, that their complex is rather superior. If you will bear with me, and pardon a personal allusion, there is just one little incident that I shall recite. I had an outbreak of illness in a family, two children that were very ill, running high temperature, with diarrhea. I could not diagnose it. They had severe abdominal pain, and I suspected possibly typhid fever, or paratyphoid, but more probably typhoid. I frankly told the parents that I did not know what the trouble was, that I would make a further study and if I could reach a conclusion I would tell them, but I was perfectly honest in telling them that I did not know. Well, that did not satisfy them, so they suggested calling a younger doctor. I acceded very readily, and I also asked permission to call another doctor, who was, by the way, the health officer of our county. We all met there. They examined the children, each of them, very carefully. The physician who was health officer thought possibly it might be infantile paralysis (poliomyelitis); he could not think of anything else; and he took some samples of blood and took them back for analysis. He later reported that the findings were negative; he found nothing wrong with any of it. The Widal test was not negative; we had a blood test, which was reported the following day, and that was negative. The health officer said frankly he did not know what was the matter, and I naturally said I did not know. The younger doctor said, in a very positive way, "If it is not typhoid fever, it is abdominal flu." Well, I question if there is such an entity as abdominal flu; I always have. The following day the health officer returned and brought another gentleman with him. They both made a very thorough study and we all agreed that we did not know what was the matter. (I might say, in passing, the patients recovered.) Still, the younger doctor did know, and he told them something. Well, that is just by the way. I don't think all the general practitioners, particularly the younger men, are afflicted with an inferiority complex.

As to the remedy, I do not know. The public will generally get what it wants. If the people want specialists, they will have them. If they want a general practitioner to take care of them, why he is there and will do the best he can.

Those of you who have never practiced in the country back in the horse-back days, when we had to ride miles and miles in all sorts of weather, night and day, through storm and sunshine, have no conception of what the older doctors had to go through. Most of them were honest; they did the best they could with the light that they had. I admit that we did not know as much as we do now, and we do not know now as much as we ought to know, but I do think the vast majority of the general practitioners of the rural communities are honest and are doing the very best work that they know how to do. Still, that does not seem to satisfy this craving for something a little farther away, and his patrons are drifting away from him to medical centers and to specialists.

I think Dr. Daniel is perfectly right; I think the men who go into the general practice in rural communities should be just as highly trained and as competent men as practice in the cities. The country dweller is as much entitled to good medical service as the urban dweller, and I should hate to see the time come when the qualifications for practice in the country are ever lowered, so that the less well trained man will seek to practice in the country and better trained men go to practicing in the towns. The country people are just as much entitled to well-trained medical service as the people in the towns.

DR. HAWES CAMPBELL, Enfield: From the standpoint of the country physician, the cure is up to him. In our medical society, I advanced this idea: That we organize into groups of ten; that one of the group look after the financial end of the work. Every man cannot afford to put in an X-ray with fluoroscope, metabolism, and physio-therapy outfits. Let one man do this and the others patronize him. Another can devote his time to pediatrics, another to obstetrics, and so on. Later the hospital idea will develop and group practice with all its benefits will be available to the countryman.

DR. DANIEL, closing the discussion: I have no further remarks, gentlemen, except just this. I think that the average general practitioner is apologetic, and my idea is that we should get that out of our system and feel that our job is *the* job in medicine. We are the most important cog, as I said in my paper, and we should not have that apologetic idea. Stick your chest out and say: "I am a general practitioner." That is the idea I want to bring to you.

THE DIAGNOSIS AND TREATMENT OF GAS BACILLUS INFECTION.*

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Millar[1] has recently reviewed the subject of gas bacillus infection in civil practice and found a total of 607 cases exclusive of obstetrical infections, reported in the literature from the beginning of the bacteriological era to 1930. This review leaves the impression that gas infection or gas gangrene is rarely seen in civil practice. Although in some districts gas infection appears to be a surgical curiosity, in others it is a relatively frequent occurrence.[2, 3, 4] At the University of Virginia Hospital this condition is encountered so frequently that a review of our cases seems desirable.

Sixty-seven cases of gas infection were seen in this clinic in the interval from November 1, 1921, to July 1, 1933, which represents a frequency of one case in every 1035 admissions to the hospital. The frequency of gas infection during this interval is shown in Table 1. The increase in the number of cases after 1926 is difficult to explain. The increasing number of automobile accidents, with the attending injuries contaminated with dirt of the highways, may be partly responsible; the infection may be more common now than formerly.

TABLE I.
YEARLY INCIDENCE OF GAS INFECTION

Year	Total Yearly Hospital Adms.	No. of Gas Cases
1921 (2 Mo.)	552	2
1922	4288	3
1923	4622	1
1924	4767	2
1925	5625	3
1926	5477	1
1927	6211	6
1928	6576	6
1929	6825	12
1930	7215	4
1931	7446	15
1932	6834	10
1933 (6 Mo.)	2886	2
Total	69324	67

One gas infection in each 1035 hospital admission.

*From the Department of Surgery and Gynecology and the Department of Orthopedic Surgery of the University of Virginia Medical School and the University Hospital.
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The type of wound in which these infections occurred is shown in Table 2. The greatest absolute number of infections, which also represents the highest frequency (12.3 per cent), is seen in compound fractures. In the twenty-six cases in this group three fractures were caused by firearms. Gunshot wounds were the second most frequent cause, with a frequency of 6.1 per cent. Lacerated wounds were the next most common cause, but it was impossible to estimate the percentage frequency because so many wounds of this type were treated entirely in the out-patient department. Gangrene of an extremity, the result of arterial occlusion was the predisposing cause in nine cases, and there were also three cases of wound infection following operative procedures on the large bowel, and three cases of gas infection complicating pregnancy, in this series.

Fifty-two, or 77 per cent of the sixty-seven cases followed traumatic injury in which there was gross contamination of the wound. It is in this type of wound that the majority of all gas infections develop.

The purpose of this paper is to discuss the etiology, diagnosis and treatment of gas infection in this group of cases.

Etiology. The B. Welchii is usually the only organism isolated in gas infection. However, it

TABLE II
DISTRIBUTION AND FREQUENCY OF GAS INFECTION

Type of Wound in Which Gas Infection Developed	No. of Gas Infections	Total Number of Wounds	Incidence of Gas-Cases
Compound Fractures	26	210	12.3%
Gun Shot Wounds	17	377	6.1%
Lacerated Wounds	9		
Arterial Gangrene	9		
Abdominal Wound for Intestinal Operation	3		
Obstetrical Infections	3		
Total	67		

has been shown[5] that the Vibrion Septique is frequently present. Other organisms have been identified with gas gangrene, but they are all very similar to the Welch bacillus, and may be referred to collectively as "gas bacillus."[6]

The gas bacillus is an obligate anaerobe, and grows only in the absence of oxygen, and in the narrow temperature range from 20 to 45 degrees centigrade.[7] The spores formed by these organisms, however, are very resistant to drying, temperature changes, etc. The organisms are found in cultivated soil, the dirt of streets and highways, and in human and animal excreta. Gage[8] has found them in all types of woolen goods, and in the wadding of shotgun shells.

In each of the fifty-two cases in this series there was gross contamination of the wound. In addition to the dirt of the clothing, there was contamination with dirt of the highways in ten cases; with dirt of the fields or woods in twenty cases; with fecal matter through perforation of the intestine in three cases; with the wadding of shotgun shells in thirteen cases; in seven instances pieces of clothing were found in the wound.

Gas bacillus infection is essentially an infection of muscle. The development of the infection in the main depends upon the presence of organisms in a wound in which there is traumatized muscle which is inadequately supplied with oxygen. Shock and hemorrhage, so frequently associated with traumatic injuries are contributory factors in the development of gas infection.

The diagnosis of gas infection can be made between the eighteenth and one hundred and twentieth hour after injury in most cases, but usually the signs of the infection are present within the first forty-eight hours. Delayed infection was encountered in only two cases in this group, the incubation period being twelve and fourteen days respectively. Excluding these two cases the average incubation period in forty-six cases was forty-four hours.

It is difficult to classify the different signs of gas infection in the order in which they appear, because there is no sequence of signs or symptoms that is constant. There are two signs, however, that are commonly observed at the onset of the infection. The first of these is a rapid pulse, usually around 120, which is more rapid than would be expected from the patient's general condition. The increased pulse rate is not necessarily accompanied by a similar rise in temperature.

The second sign is swelling, accompanied with pain in the injured part. Pain of short duration followed by numbness has been emphasized by Taylor[9] as suggestive of gas infection. It is striking that most patients with gas infection remain clear and alert mentally and show little concern about their serious condition. Euphoria is marked not only at the onset of the infection but may persist to within a few moments of death.

One of the cardinal signs of gas infection, though not usually an early one, is crepitation, or the crackling sensation imparted to the fingers on palpation of gas-containing tissue. The presence of gas in the wound itself may be demonstrated by pressure with the flat of the hand in the direction of the wound. Though gas is often present in the tissues early in the course of an infection, its presence may be masked. In suspicious cases the X-ray may be helpful in showing gas bubbles in the soft parts. An occasional case is encountered in which there is no gas in the tissues.

The odor associated with gas infection is characteristic. It is putrefactive, offensive, almost indescribable, but once encountered it will never be forgotten. The odor is often a very early sign, but at times it is not detected until the wound has been opened.

There is a fairly characteristic discharge of thin, dark serosanguineous material from the wound, which is loaded with organisms.

Wallace[10] has studied the color changes that occur in the skin and muscle in gas infection. He states that at first the skin has a pale appearance, due simply to the tenseness of swelling. This is succeeded by a dirty cream tint, which may be taken to indicate that gangrene is definitely established. The subsequent changes are quicker and more dramatic. Areas of purple staining appear, which are irregular but distinct, and which enlarge and coalesce. Soon blebs filled with blood stained fluid appear, the purple color then quickly becomes a deep greenish yellow, which is the final stage of gangrene.

The color changes in the muscle are equally distinctive but more rapid in their development. The muscles first take on a glistening yellow appearance, which soon changes to purple and then the

deep grennish yellow color of the final stage. The connective tissue may be similarly changed.

It must be borne in mind that early diagnosis is imperative, and while the color changes and the gangrene are characteristic, they are late signs. Any contaminated wound in which the early signs are noted should come under suspicion, and attempts made then to substantiate a diagnosis by demonstrating the organisms in smear or culture. Diagnosis by smear is preferable to culture because the delay in obtaining a report on the culture means invaluable time lost from treatment.

Treatment. Since the development of gas infection hinges on trauma and contamination of tissue it is pertinent to discuss the initial treatment of such wounds. As soon as feasible, all traumatized tissue possible should be excised, all loose pieces of bone, foreign bodies, pieces of clothing, and blood clot should be removed from the wound. Tight closure or packing of the wound should be avoided. Shock, of course, should be treated first, and any marked blood-loss incident to the injury should be made up by transfusion as soon as possible.

The surgical treatment of wounds in which gas infection is present was explicitly outlined by the Medical Corps of the United States Army[11] just before the battle of Chateau Thierry. This outline in the main applies to civil cases today as well as it did to the war wounds of yesterday, and is quoted here in part with some amplification.

1. Operate as early as the diagnosis is made.
2. In cases in the extremities avoid the use of tourniquets.
3. Make incisions longitudinally, and half again as long as thought necessary in both skin and fascia.
4. Go between muscles rather than through or across them.
5. Excise all discolored, noncontractile muscle, and all other infected tissue. By the removal of an entire infected muscle or group of muscles, the spread of infection may be stopped, and amputation may at times be avoided.
6. Leave the wound wide open. Dress the wound with gauze, laid in, not packed in.
7. Carrell tubes should be placed deep in the wound for purposes of irrigation only if it is sure that they will be properly cared for.
8. Parts that have inadequate blood supply, or those in which gangrene is already present, should be amputated at once.
9. When amputation is necessary, disarticulation should be done when feasible. If this is not possible, the guillotine amputation is the operation of choice.

In addition certain other procedures are of importance in the treatment of gas infection. Because of the anaerobic nature of the causative organisms, oxidizing agents are of value. Potassium permanganate and hydrogen peroxide have been widely used, the latter also because of mechanical cleansing of a wound by its bubbling action. Dakin's solution has been popular. These solutions can be used as irrigants if Carrell tubes have been placed in the wound, and irrigations should be done every two or three hours. They may also be used to advantage in wet dressings on wounds in which tubes cannot be placed, such as amputation stumps.

In most gas infections there is a rapid destruction of red blood cells by the hemolytic toxin[12] formed by the gas bacillus. Frequent transfusions are helpful in combating this condition.

The use of specific antitoxin in the treatment of gas infection was begun during the World War. A polyvalent antitoxin is now available in fifteen cubic centimeter ampules containing 10,000 combined units.* This serum is sold under the name of Perfringens antitoxin. Five thousand units is considered a prophylactic dose, and twice that amount a therapeutic dose.

The use of serum as a prophylactic agent has been widely urged.[13] Although it is not as efficient in the prevention of gas infection as tetanus antitoxin is in the prevention of tetanus, it is felt that there is sufficient evidence of its value to justify its use in the prophylactic treatment of badly contaminated wounds.

Serum plays a far more important role in the treatment of a fully developed infection. Following the use of serum, the temperature and pulse rate fall, and there is a striking improvement in the patient's general condition. This is not lasting, and repeated injections are necessary. The usual therapeutic dose is 10,000 units of polyvalent serum,

*Formerly a less concentrated polyvalent serum was used in this clinic. This serum, sold also under the name of Perfringens antitoxin, was supplied in 50 and 100 c.c. bottles. One c.c. was equivalent to one unit. The prophylactic dose varied from 12.5 to 100 c.c. The therapeutic dose was 100 c.c. Reference to this serum is made in Table IV in the treatment of cases seen prior to 1931.

which may be repeated two or three times a day, depending on the severity of the infection, and should be continued as long as there is any evidence of gas infection. It is believed that the intravenous method of administration of serum is best, and it is easily given by adding the serum to a suitable amount of normal salt solution. However, intramuscular administration is satisfactory.

It must be emphasized that serum in no way supplants surgery in the treatment of gas infection. Early adequate debridement is the most important single factor in the prevention of infection, just as surgery is the most important part of the treatment of the infection. Serum can be considered an adjunct in the treatment, but when combined with surgery, it may have a marked influence on the outcome of the infection. It is felt that the value of serum is reflected in the lower mortality in a selected group of cases in this series that were treated with antitoxin.

Mortality. There were seventeen deaths in this series of fifty-two cases, a mortality of 32.4 per cent. In one of the fatal cases death was caused by amoebic abscess of the liver, three months after the gas infection had entirely cleared up. Three fatal cases were gunshot wounds of the abdomen, in which there was gross soiling of the peritoneum because of multiple perforations of the bowel. The extent of injury in these cases was in itself more than enough to cause death. Gas infection developed in the margins of the abdominal wounds a few hours before death. These four deaths can scarcely be considered the result of gas infection, and if they are not included, the mortality is 25.0 per cent.

Thirty-nine of the fifty-two cases received serum in adequate dosage as part of the treatment. Of these six died, a mortality of 15.3 per cent. This figure is suggestive of the value of serum as a therapeutic agent.

DISCUSSION

Since gas infection is the most serious complication of traumatic wounds, the initial treatment of such wounds should be directed toward prevention of infection. The war experience clearly showed the importance of early and complete debridement of contused wounds in the prevention of gas infection. Largely by this means the incidence of gas infection in the British Army[14] was reduced from twelve to fifteen per cent in the first year to one and six-tenths to three per cent in the last year of the war. It is obvious, however, that in the more severe wounds, in which the soft tissues are badly lacerated, where dirt is ground into the tissues, where blood supply to the part may be destroyed or badly damaged, gas infection may develop regardless of any treatment short of amputation, and sometimes even then. It is difficult to practice in civil surgery the radical procedures that may seem commonplace in war surgery. Justifiable efforts to save an extremity may be reflected in the incidence and mortality of gas infection.

There are several points in the diagnosis and treatment of gas infection that bear re-emphasis. First, any traumatic wound may develop gas. It is important that such wounds be observed closely in order to detect the infection at the earliest moment, should it occur. Close observation is imperative because of the rapidity with which this infection may develop. Secondly, immediate treatment of gas infection is essential since it is a most urgent type of emergency, being second only to active hemorrhage. Early diagnosis is therefore imperative, and one must be on the alert for unusual pulse rise, or any unusual swelling or pain in the injured part. Thirdly, should such conditions, suggestive of gas infection develop, it then becomes necessary to open the wound in an effort to confirm the diagnosis, by finding the organisms. Smears should be made for immediate study, because delay in waiting for a report on a culture is valuable time lost in treatment.

The prognosis of gas infection depends on early diagnosis and treatment. If gas and actual gangrene are present before treatment is begun, the outlook is less hopeful than it is if these findings are not present.

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DISCUSSION

DR. I. A. BIGGER, Richmond: I would like to congratulate Dr. Stone upon his very excellent presentation of this interesting and important subject. He has covered it so fully and our ideas are so similar, that I have little to add. There are, however, one or two points, particularly with regard to treatment, that I would like to emphasize. The first is that I do believe in the prophylactic administration of gas-bacillus antitoxin. It is very difficult to prove its value when so administered, but I have gotten the impression that its administration as a prophylactic measure is of definite value. We have had two patients in the hospital who received a prophylactic dose of gas-bacillus antitoxin soon after the injury, and both developed gas-bacillus infection. Both had extensive wounds and both had associated streptococcus infection, which always makes the prognosis more serious. In spite of this, the gas-bacillus infection was mild and both patients recovered under conservative treatment. This does not prove anything, but it suggests that the prophylactic administration of gas-bacillus antitoxin may decrease the virulence of the infection even though it does not prevent it. I also believe that the antitoxin is of value in therapeutic doses, if given early in the disease.

Conservative treatment should be carried out in gas-bacillus infections whenever possible. When it starts in an extremity at some distance from the trunk, the patient should be given a therapeutic dose of the antitoxin and watched carefully to determine the rate of spread of the infection. If the spread is slowed up or stopped, conservative treatment should be continued; but if the infection continues to spread rapidly, amputation had best be done.

DR. M. B. HIDEN, Warrenton: I have had three cases of this infection within the last three years, which is a good many for one doctor. Two died, and one got well. One, a policeman, had a consultant from Washington, a large amount of antitoxin, three amputations, and then died. Another, a young girl, was treated by the extensive use of iodin. I went to Washington and was called back; they said the wound did not look right. When I got back I found that gas infection had developed. I amputated the arm at the shoulder. There was gas in the tissues; the gas extended down the side of the chest, but the child got well.

When you have gas in the tissues, you do not always have gas-bacillus infection. As you realize, when you have a wound of the chest, the lungs may pump air into the tissues, and it is remarkable how far from the site of the wound this gas will extend. The author of the paper, in closing, I think will verify the fact that in wounds around the lungs, where there is gas in the tissues, you should be very careful how you call that gas-bacillus infection.

DR. G. PAUL LAROQUE, Richmond: I do not remember whether Dr. Stone mentioned the fact that gas-bacillus infection occurs in other things than trauma. I have seen it in two cases of ruptured appendicitis and in one case following amputation for gangrene. It is well known that it may develop in cases of diabetic gangrene.

DR. M. H. TODD, Norfolk: The X-ray will sometimes make the diagnosis of gas-bacillus infection. There is a little confusion that may sometimes arise: in a contused wound we may sometimes see little bubbles of air out in the tissues; but in gas-bacillus infection you do not see the gas at once but see it after a day or two. And, of course, it spreads. If you wait an hour or two and take another X-ray, you will see it has spread out farther in the tissues.

That is a point I want to make—that you can make the diagnosis by the X-ray.

DR. STONE, closing the discussion: Although it is not shown by this study, we have seen a good many cases in which the administration of gas-bacillus antitoxin has seemed to be of therapeutic value.

In regard to air in the tissues, attention has been drawn to the air that is often trapped in the tissues, particularly in compound fractures, or wounds caused by blunt instruments. I think it is important, in differentiating between trapped air and the gas of gas-bacillus infection, to consider the length of time that has elapsed between the time of the injury and the appearance of this air in the tissues and also what procedures have been followed in treating the wound.

This discussion was limited to traumatic cases merely because of the greater frequency of gas-bacillus infection in such conditions. We have seen this condition in several cases of arterial gangrene of an extremity which have not been included in this report.

THE MANAGEMENT OF ACUTE CORONARY OCCLUSION.*

WILLIAM B. PORTER, M. D.,
Richmond, Va.

Acute coronary occlusion is one of the true emergencies seen by all who are engaged in the practice of medicine. It is, of course, essential for one to be able to recognize the malady in all of its bizarre and elusive manifestations, yet it will profit the distressed patient little if the diagnosis is merely a tag of identification. An adequate foundation for rational therapy must rest on an understanding of the changes taking place in the heart and a keen appreciation of the resulting varied disorders of function and how they are affected by certain remedies.

When a coronary artery is occluded the blood supply to an area of heart muscle is cut off because collateral circulation is quite imperfect. The immediate results depend upon the distribution of the occluded vessel and upon the size of the resulting myocardial infarct. It is too well known that instant death may and frequently does occur so suddenly that therapeutic effort is precluded. Escaping this tragic event, the patient faces others of immediate importance, and the outcome of the case often depends upon an understanding of their nature and their effect upon the heart and patient.

Circulatory collapse, similar in its essential nature to that noted in traumatic shock, induced by the severe pain and trauma to the heart, is a frequent and outstanding event and may prove fatal in the first twenty-four hours. The clinical situation in its fundamental nature is not unlike that seen in traumatic shock due to a crushing injury to the liver or other vital areas of the body.

When the area of heart muscle involved is sufficiently large or the accident has occurred in a heart already extensively diseased, heart failure of the congestive type may follow and death may occur after a varying period of progressively increasing degree of cardiac invalidism; and as a rule therapy has little effect on its progressive downward course toward a fatal termination.

Fortunately the usual situation which one has to approach therapeutically is represented by the patient who escapes a fatal outcome during the first twenty-four hours, and who recovers from the initial circulatory shock and becomes free from pain with slight or no evidence of heart failure of the congestive type. During the succeeding five to eight days certain changes of the greatest clinical importance are occurring in the infarcted area. Muscle tissue is dying and the irritability of the surrounding muscle is greatly increased, to the end that ventricular tachycardia or fibrillation (somatic death) may occur either spontaneously or be induced by the unwise use of drugs, notably the digitalis group, as "cardiac stimulants." Experimentally and clinically this is a real danger and all too frequently this well estabished truth is ignored in the treatment of coronary accidents. At the conclusion of the first ten days after a coronary occlusion, two accidents must be anticipated. Mural thrombus formation inevitably occurs over the area of myocardial infarction if the lesion involves the ventricular endocardium. Dislodgment of pieces of the thrombus is common, resulting in embolic infarcts in various areas of the body, especially the brain, kidney and spleen. I have observed also embolic occlusion of the brachial, posterior tibial, and in one instance of a branch of the superior mesentery artery. Rupture of the ventricle due to a weakening of its walls following necrosis of the infarct is an accident liable to occur any time after the first week and one is never free from this possibility until at least eight weeks have elapsed after the onset of the primary accident.

This brief and incomplete survey of the possible events occurring in the wake of coronary occlusion has been designed primarily to give a setting for a rational approach to the therapeutic management of acute coronary occlusion. As has already been stated, a definite number of those individuals who have occlusion of one of the important coronary vessels die so suddenly that no medical aid is possible. They represent that interesting group appearing in the daily press as having met death from "acute

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

indigestion," or who make their first medical contact with the coroner. This type is manifestly eliminated from the stage of therapeutic action.

If one approaches therapeutically the remaining group during the first week of illness with the clear understanding that the problem is one demanding the use of the same measures commonly employed in physical trauma to an important viscera; and if the measures he uses are chosen with care to the end that pain, circulatory collapse and shock are effectively combated; and if everything is designed to render less liable disturbances of the heart mechanism which may prove fatal, he will give the patient his rightful opportunity for recovery. The first and foremost indication is that pain must be relieved,—otherwise death is inevitable. Morphine sulphate is the drug of choice and its use must be in doses sufficient to secure relief. It is difficult to indicate specifically how much morphine is safe, but we have on one occasion given three grains to a patient over a period of seven hours. On two occasions it has been necessary to use nitrous oxide and oxygen for the relief of pain, and in each instance the relief was complete and both patients recovered. Nitrous oxide and oxygen is the anesthetic of choice for it is free from the objectionable effects on the heart and blood pressure inherent in other general anesthetics. The use of oxygen in high concentration 40 per cent to 50 per cent has recently been advocated by Riser[1] for the relief of pain. We have had a limited experience with its use and the impression is that some modification of pain, shock and cyanosis was undoubtedly secured. If circulatory collapse and shock continue as conspicuous aspects of the clinical picture after the relief of pain has been secured, concentrated glucose in 50 per cent solution should be administered intravenously, in repeated doses of 20 c.c. every two to three hours.

The question which creates the greatest amount of anxiety is concerned with the use of stimulants in coronary occlusion, for they are usually prescribed and most frequently digitalis is the one of choice. An unequivocal answer cannot be given at this time, yet there are certain definite data very pertinent to the problem. The principal action of digitalis is on conduction and its greatest usefulness is the protection of the ventricle from ectopic stimuli in auricular fibrillation, a condition rarely occurring in coronary accidents. Increasing tonicity and force of contraction are lesser actions of digitalis, and this action is probably observed only in special types of heart failure due to myocardial fatigue and exhaustion. It would be futile to attempt stimulation of a portion of the heart muscle which was undergoing ischemic necrosis and illogical to increase the force of contraction of the uninvolved muscle which is already seriously handicapped by the shock induced by trauma to the neighboring heart muscle fibers; and, even if the force of cardiac contraction were increased, it would be a doubtful benefit, for it would merely increase the strain on the weakened ventricular wall, rendering more liable rupture or aneurysmal formation. During the first five to seven days the most common mechanism of death is probably the development of ventricular fibrillation and not heart failure of the congestive type. Since the original work of Robinson and Herrmann[2] on the action of digitalis in coronary occlusion, it has been known that the ability of this drug to increase the irritability of the ventricular musculature is greatly augumented by myocardial ischemia. In 1926, I reported[3] a series of clinical observations confirming this work and showed that ventricular tachycardia was frequently induced by digitalis in doses well below the calculated basal requirements when used in patients who have coronary disease with relative or absolute myocardial ischemia. It is highly probable, therefore, that digitalis may actually increase the liability to the development of the most common fatal event following coronary occlusion, a fact that must be carefully weighed against the doubtful advantages following its administration. In general, there are many reasons why digitalis may do harm and unless clearly indicated by auricular fibrillation which is rare, or serious heart failure of the congestive type which is usually irreducible, it should be omitted entirely in the treatment of acute coronary occlusion during the first seven to twenty days after the onset of the accident. It is my practice to begin quinidine sulphate, 3 grains three to four times each twenty-four hours, after the first twelve hours and this is continued for at least four weeks. It is used in the hope of preventing the all too frequent sudden death from ventricular fibrillation. Theobromine sodium salicylate, or theobromine calcium salicylate, supposedly have an effect upon coronary blood flow, augmenting the minute volume of the coronary circulation. Drugs of this class have become extremely popular in recent years and numerous observers have reported favorable results

from their use in the "angina of effort," suggesting that improvement of coronary circulation was accomplished. It would seem logical, therefore, to prescribe the theobromine derivatives in coronary occlusion, with the hope of promoting collateral circulation and improving the coronary blood flow to the myocardium in general. There does not appear to be any contraindication to their use, and my impression is that benefit may logically follow. Some patients experience distressing gastric irritation after taking the drug, yet most patients can comfortably consume 60 grains of theobromine calcium salicylate divided equally in four doses each twenty-four hours. The drug should be continued for two to three months, interrupting its administration for a few days if the stomach is disturbed.

No attempt will be made to discuss the care of the patient beyond the period of "acute coronary occlusion" which is usually concluded by the tenth day. It is, however, at this point that the patient becomes his own worst enemy, for he is restless to be up and about that he "may regain his strength"; yet too much emphasis cannot be given to the necessity for prolonged and absolute bed rest. There is no reliable criteria which will enable one to judge whether there has been a large or small infarction, nor how long it takes for healing to occur. We have followed several patients with heart wounds who have had coronary vessels ligated and in these the electrocardiograms did not return to normal in a single instance in less than eight weeks. This is highly significant, for the patients were young men with normal coronary vessels, a situation quite unlike that existing in those with spontaneous occlusion of a sclerosed coronary vessel. Our practice is to consider eight weeks of bed rest the minimum, regardless of the apparent mildness of the initial symptoms.

SUMMARY

The evidence gained from a study of wounds of the heart with injury to important branches of the coronary arteries indicates that complete healing of the induced infarct requires at least ten weeks. It is reasonable to conclude that infarcts following spontaneous occlusion of diseased vessels require even a more prolonged period.

It is doubtful whether "stimulants" of the type represented by digitalis should ever be used in acute coronary occlusion. The reasons for this conclusion have been presented in detail and there is strong evidence suggesting that illogical therapy may augment the liability of the primary mechanism of death, namely, ventricular fibrillation.

The fundamentals of the therapy of acute coronary occlusion are the prompt and complete relief of pain; the control of shock; the promotion of adequate coronary blood flow; the lessening of the liability to fatal ectopic ventricular rhythms, and absolute and prolonged physical and mental rest.

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DISCUSSION

DR. W. H. HIGGINS, Richmond: Any disease which has an immediate mortality of from 16 to 25 per cent and a mortality of 50 per cent over a period of two years is one which should command the most serious consideration of every physician who comes in contact with sick people, regardless of his specialty. Acute coronary occlusion, to the medical man, is in many respects what cancer is to the surgeon, and it should be looked upon in the same manner so far as the prognosis and the high mortality are concerned.

After hearing Dr. Porter's description, so admirably given, of the pathology underlying an attack of acute coronary occlusion, the question of the treatment can be boiled down under two headings: first, the question of rest, and, second, the question of drug therapy. Many of us who have seen these cases in their acute attacks are goaded on, so to speak, by the anxious family to do something immediately, and, before we find ourselves, we often have introduced many lines of therapy which are more or less inimical to the well-being of the patient. So the question is largely what we should not do rather than what we should do. When you consider that there is a circumscribed area of the heart muscle with the blood supply cut off and impending necrosis, you can see there is little we can do. But certainly one of the things we can do is to give the patient absolute rest. That means not only having the patient go to bed, but seeing that he is absolutely quiet in bed. If the case is one with profound involvement of the heart, turning over or moving his arms should be prohibited. Often we have patients who have their attacks in the homes, and the physician, in his eagerness to give them the best possible care, immediately sends them to the hospital, introducing an element of exercise and strain which is not justifiable.

Dr. Porter has emphasized the value of giving large doses of morphin, where necessary, to secure freedom from pain.

Under therapy, the first heading is rest, and the second heading is avoidance of stimulants—the so-called cardiac stimulants, digitalis, caffein, strychnine, and other drugs of that kind. Digitalis seems to be in general use, and in thinking over those cases which I have seen with other physicians I have yet to find one which has not been started on digitalis from the very beginning. As Dr. Porter has emphasized, we are probably introducing an element which would tend to do harm rather than do good; and in these early cases, certainly, I feel that digitalis is not the drug of choice.

As to quinidin, if there is no fibrillation at the start, I am not disposed to use quinidin. My feeling is more of a "hands-off" policy when the heart is still having its normal rhythm, rather than introducing a drug the individual susceptibility to which we are not certain. There have been reports from time to time of more or less disastrous results.

I think there is sufficient experimental evidence to show that we do get some increased blood flow through the coronary vessels from theobromin or one of its compounds, and I believe it is a drug which has value and should be used over a period of a number of weeks.

If the patient survives the first few days, the question of trying to help to restore some of the damage to the heart muscle is one which comes under consideration. The use of dextrose solution in small quantities has some experimental evidence in its favor, and I think it is probably something that should be considered in cases where we have evidence to make us feel that its use might be of help.

I feel that drugs are second in importance to rest for the patient. Prolonged rest, which not only covers the acute illness, but which goes on for a number of weeks afterward, is the most essential factor, because where a man has had acute coronary occlusion he has an impaired heart and will always have an impaired heart, and the longer we can keep him absolutely free from physical and mental strain the better are his chances of establishing a satisfactory collateral circulation.

Dr. Porter's presentation is very practical. From the large number of cases we see, I think it is a condition with which every physician should be entirely familiar; and with the judicious care which Dr. Porter has outlined I think we can save some patients who would otherwise come to a rather early fatality.

DR. N. G. WILSON, Norfolk: Please let me say a word in regard to quinidine. One who has seen a patient die as the result of administration of this drug has a very wholesome respect and fear for its unhappy effects.

When I referred to Dr. Scott's use of quinidine in his case report, I had in mind particularly the fibrillation in an elderly man with manifest cardiovascular disease without preliminary digitalization.

At the moment of restoration of normal rhythm there is an instant of ventricular standstill which, in a subject with a badly damaged myocardium, creates a very dangerous situation. In my work, at least one such disaster has occurred, and I rarely allow an opportunity to emphasize the danger of its possibility to pass unnoticed.

The literature regarding the use of quinidine abounds in just such warnings as I have voiced.

DR. PORTER, closing the discussion: It is absolutely imperative that certain questions referable to the use of quinidine be clarified. During the discussion the word "fibrillation" has been constantly used. No distinction has been made between auricular fibrillation *versus* ventricular fibrillation. I have the impression that some of the discussors do not have a clear conception of the fundamental difference between these two conditions. Ventricular fibrillation is in reality clinical death and is only noted by the electrocardiograph. It is probably the mechanism of death in the majority of patients who succumb following coronary occlusion. Experimentally this mechanism of death can be prevented by the use of quinidine prior to the ligation of a coronary vessel. In my paper I have recommended the use of quinidine with the idea in view of warding off the occurrence of this fatal arrhythmia during that period when the irritability of the ventricular musculature has been greatly heightened by the infarction. I will not discuss the use of quinidine in *auricular fibrillation* for the reason that this is a special subject and would require more time than I have allotted to me at this time.

OBSERVATIONS ON NASAL ALLERGY.*

OSCAR SWINEFORD, JR., M. D.,
University, Va.

Nasal allergy is an extremely common cause of human suffering. It forces perhaps 1 to 2 per cent of the population to seek medical attention at some time in their lives. Nasal allergy is manifested as hay-fever and termed perennial if its manifestations occur at any time, and seasonal if present only at some particular time of the year. The terms atopic coryza, allergic rhinitis, vasomotor rhinitis, hyperesthetic rhinitis, and rose cold are also widely used. From habit we use the terms vasomotor rhinitis and perennial hay-fever interchangeably.

*From The Allergy Clinic, Department of Internal Medicine, University of Virginia Medical School.

Read by invitation, before the meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society, January 13, 1934, University, Va.

A brief review of the fundamental concepts of the allergic process and an application of them to the pathological physiology of the nose will precede some comments on the diagnosis and treatment of nasal allergy.

The progress which has been made in the field of allergy in the last twenty years is remarkable. Clinical results, obtained by the application of rational diagnostic and therapeutic methods, have improved far more rapidly than in almost any other branch of medicine. There is still much to be learned but it is doubtful if so much of practical value has been accomplished in any field so broad. For example, we know that the allergic individual is born with the capacity for becoming sensitive in some parts of his body to some thing or things; that the sensitized parts may react to substances inhaled, ingested, injected, or absorbed from an infectious focus; that the substances to which they become sensitive may be harmless *per se* and are usually such simple things as animal epidermals, pollens, foods, drugs, chemicals, sera, bacterial products; that the reaction produced by the contact between sensitizing substance and sensitized tissue is an antibody-antigen reaction and is characterized by smooth muscle spasm plus exudation, in varrying degree; that the severity and frequency of the reactions are influenced by a number of less specific factors such as fatigue, constipation, focal infection, acute infections, emotional states, temperature and humidity changes, etc., which often seem to be and perhaps may be more important clinically than the specific allergen-antibody reaction; that the specific allergen can be determined often and easily by skin tests and history, less often and less easily by statistical avoidances; that the reaction between allergen and antibody seems to be highly specific at first but may eventually assume the characteristics of a "trigger mechanism" capable of being "set off" by nonspecific influences; that the reaction will cease to occur if the specific substances are avoided or removed or, if the sensitized area is desensitized or immunized against the sensitizing substance; that the nose is as frequently the site of the allergic reaction as any other part of the body.

The anatomy of the nose is such and normal variations are so great that it is no wonder that slight variations from the normal volume of the mucosa produce trying symptoms. It is known that the nasal mucosa varies in volume normally under the influence of, distant or local, external or internal temperature reflexes, and of emotions. The volume varies abnormally with vasomotor instability, as in the menopause or thyrotoxicosis or focal infections, as well as from local irritations from infection or allergic reactions. The normal variations may be excessive in the presence of spurs or deviations of the septum, etc. Whenever the nose is small and the stimuli to congestion great, the breathing space becomes limited and symptoms of nasal obstruction occur. It is doubtful if the cause of most specific instances of nasal congestion could be identified were it not for available concomitant diagnostic information such as the finding of pus, the menopausal syndrome, a positive allergic history, evidence of thermal hypersensitiveness or emotional strain. It would seem then that there are other influences than infection and hypersensitiveness to an allergen which can produce continued nasal congestion.

With this preamble, it is not difficult to predict that the allergic reaction of edema plus smooth muscle spasm in the loose erectile tissue of the mucosa of the narrow space of the upper nasal passage will produce blockage of the air passages, a thin discharge, and local irritation with resultant sneezing and burning, which may be paroxysmal or continuous, occasional or frequent, mild or severe. It is also easy to predict that the mucosa will be pale and boggy and that if this condition persists the membrane will degenerate and that all of the nasal functions will be impaired and that the resistance of the sinuses to infection will be lowered. It is less easy to predict the distant effects, which are, however, of extreme importance, viz.: (1) The nasal blockage causes mouth breathing which in turn results in irritation and congestion of the bronchial mucosa from the increased work of warming and saturating the inspired air, an increase of about 50 per cent over the normal basal work of the bronchial mucosa. (2) The nasal blockage interferes with the proper function of the delicately adjusted heat regulating mechanism, necessitating a redistribution of the functions of heat loss or conservation between the bronchi, skin, sweat glands, urine, etc. (3) The swollen mucosa of the nose may press upon the "asthmagenic area" of the nose, giving rise to impulses carried up the sensory path-

way to the vagus nucleus, thence out the vagus pathway to the bronchi and intestines as vagotonic, i. e., spastic impulses. (4) Secondarily infected sinuses, already mentioned, frequently serve as foci of infection. (5) The lymphatic drainage from the pharynx, which is bathed in the secretion from and shares in the reaction in the nose, is, in part, to the mediastinal groups. (6) The secretion which is moved posteriorly is probably swallowed and aspirated during sleep in considerable quantities. It is small wonder then that so many people with chronic nasal allergy or infection get bronchitis and asthma.

The diagnosis of nasal allergy is simple in most instances. The differential usually lies between infection and hay-fever, although it is believed that hay-fever or vasomotor rhinitis from menopause, worry, or abnormal responses to thermal influences do occur. Occasionally, too, infection and hypersensitiveness occur together. But, by and large, the allergic nose can be recognized by: The history of itching; watery discharge; machine gun sneezing, which is usually paroxysmal; the variation from complete freedom to complete obstruction in a short time; the alternation from one side to the other; the occurrence of associated paroxysmal conjunctival itching, redness, burning and lacrimation; the remarkable absence of febrile reaction; the history of one cold after another, and of wheezing when colds settle in the chest. It is surprising how often this history can be elicited. There is usually though not always a family or personal history of one or more of the other allergic diseases. The nasal secretion characteristically contains over 10 per cent of eosinophils. The nasal mucosa is pale and boggy rather than red and tense. Polyps are apt to be present in chronic cases. Skin tests are often positive.

In the management of a case, the pathological diagnosis having been made, an etiological diagnosis must be made. This is done: (1) by questioning carefully about the influences of inhalants, foods, and thermal changes upon the symptoms. The attempt is also made to elicit all potential nonspecific factors such as constipation, dead teeth, other focal infections, emotional strain, and fatigue; (2) by skin tests; (3) by food and inhalant eliminations; (4) by thermal tests.

Thermal hypersensitiveness is recognized (1) by the history of the aggravation of symptoms when the weather is changeable, very hot, very cold, damp, humid or dry; by hot or cold baths; by draughts or getting feet wet; by over exertion or relaxation; (2) by testing for the effect of thermal influences. In this clinic we test for respiratory thermal sensitiveness by exposing the chest and face to infra red heat, then to ice packs. If no reaction occurs, heat is applied while breathing hot air from a moist towel; then cold air from an ice pack; then cold is applied while breathing cold air then hot air. If an attack of hay-fever or asthma is produced; the opposite thermal influence is applied immediately, usually with prompt subsidence of symptoms. This is a slight modification of technique (for the sake of simplicity) advocated and developed by Duke. (3) Fluctuating basal metabolic rate. (4) Low grade fever or unstable temperature or subnormal temperature.

To be rational, any treatment depends, of course, upon the diagnosis. The thing that makes all allergy so fascinating is that in no field of medicine is the detection of etiological differences between consecutive cases so important to their successful management. Without an etiological diagnosis the management of any allergic case is symptomatic, haphazard and, therefore, unsatisfactory.

Nasal allergy is no exception to this rule. Seasonal hay-fever, almost invariably pollen or occupational, is a problem for the allergist, who resorts to pollen injections, ephedrine, and conjunctival demulcents. It is clinically quite characteristic, easily recognized and on the whole easily controlled. Vasomotor rhinitis or perennial hay-fever, on the other hand, presents a problem which is much more complex and is, therefore, much less easily controlled. In the first place vasomotor rhinitis can occur theoretically from any condition which disturbs the delicate local balance between the vasospastic and vasodilator nerves of the nose. It has been stated that this balance can be upset reflexly by emotional disturbances, sex excitement, focal infections, disorders of the heat regulating mechanism, menopausal instability, and locally by irritation from infection or the allergic reaction. It would obviously be foolish to treat a patient locally with packs, shrinkage, antiseptics, etc., if the nasal symptoms were coming from an allergic nasal reaction to wheat. It would be equally foolish to expect relief from allergic

therapy if the personal and family allergic history and tests were negative, but the patient could date the onset to an acute purulent rhinitis which did not clear up and examination showed a badly deflected septum and pus could be obtained from the ethmoids by shrinkage and suction. Or, if this allergically negative patient were worried about her child who was in a tuberculous sanatorium, or was free from symptoms except with menopausal flushes, or had three abscessed teeth, or never had symptoms except over the kitchen stove, or in the first cold days in the fall, little could be expected from allergic therapy alone. At least one of each of these cases has been seen in this clinic.

A great many of these cases can be shown to be allergic and, on this account, a thorough and capable allergic study should be made of each patient. But, if they are not found to be allergic, other possibilities must be examined. At this point it is suitable to inject a criticism of a very prevalent misconception of what constitutes an allergic study. It is commonly believed by misinformed physicians that a particular syndrome cannot be allergic because skin tests are negative. In the first year of our Allergy Clinic, five of twenty-one patients with hay-fever, and seven of thirty-three with asthma who were greatly benefited, were skin negative. The skin test is an invaluable but not the only diagnostic aid. It must be repeatedly done and carefully interpreted before it can be called negative. To be significant, all positive skin reactions must be verified clinically. It is the custom in the Allergy Clinic to spend from 40 to 120 minutes taking what we call an allergic history. We feel that this is time well spent. We learn more from it than we do from skin tests in many cases. An allergic history, to be valuable, requires patience and practice. To resume, if the patient is shown to be sensitive clinically, not just dermally, to an external substance, avoidance of it usually results in relief. If sensitive to an internal substance like bacteria, vaccines or removal of foci will often be effective. If the external substance cannot be avoided, injections of extracts of it, especially if it is an inhalant, will often help.

We have been surprised to find the number of cases in which the symptoms can be temporarily relieved or aggravated by exposure to temperature extremes by means of infra red heat and ice packs. An analysis of our experience with so-called physical allergy will be reported later. Duke has been the pioneer in this field which we think is the most important advance in the field of allergy since the development of the skin test and the principle of parenteral desensitization. Quite often foreign protein shocks help these patients for varying periods, especially if they can be shown to have subnormal temperature curves.

In spite of the best efforts of those best trained to treat perennial hay-fever, an appreciable number of patients continue to have symptoms. In a large number the results from allergic therapy are brilliant. This is true of all of the so-called allergic diseases. It is quite possible that the number of unsuccessful cases will be progressively reduced by improved methods of applying existing allergic practices or, more probably, by the elaboration of new working hypotheses which will be as novel when formulated as Duke's conception of physical allergy now is.

So far we have considered only the uncomplicated seasonal and perennial hay-fever or vasomotor rhinitis. If vasomotor rhinitis persists constantly enough and long enough local complications will arise. By and large, polypoid and myxomatoid degeneration of the mucosa of the nose and sinuses, or infection are the most important. Polyps should be removed and pus should be evacuated. A badly deflected septum or obstructing spur should be removed. I see no contraindications to this. What to do for the victim of large boggy middle tubinates who can rarely breath through either nostril is a controversial problem. Some cases, unquestionably, require a surgical relief from obstruction of the ostia, others from pressure on the asthmagenic area. The questions to be answered in each case before undertaking destructive surgery are: (1) Has every conservative thing been done to relieve this trouble? (2) If so, will the operation allow the respiratory and heat regulating mechanisms to function better or worse than now? (3) Is the condition now sufficiently serious to justify a destructive procedure, remembering always: that vasomotor rhinitis is sometimes a self-limited condition; that repeated conservative procedures are apt to be preferable as long as they produce temporary relief; that destructive surgery *per se* seldom cures, and is at best palliative

and preventive of local and distant complications. The palliative efficacy of such conservative remedies as ephedrine plus a sedative by mouth, ephedrine locally, anesthetizing the sphenopalatine ganglion, cauterization, foreign protein shocks, calcium, tonics, thermal treatment, sinus drainage, removal of polyps, as well as the indications for radical surgery, must be evaluated for each patient. This is best done by collaboration between the Allergist and the Rhinologist.

CHRONIC NON-TUBERCULOUS PULMONARY INFECTIONS.*

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An attempt to cover in even a cursory fashion all the non-tuberculous diseases of the lungs would make this presentation entirely too voluminous. Such conditions as pneumoconiosis, lung tumors, and the changes incident to the presence of foreign bodies, are of sufficient importance to justify individual consideration at some future time.

As we all know, pulmonary tuberculosis is the most common chronic pulmonary infection, and, therefore, must be considered in the differential diagnosis of all chronic lesions involving the lungs.

The Committee of the National Tuberculosis Association on Diagnostic Standards[1] has set forth certain factors for the diagnosis of tuberculosis; a proper application of these factors to all pulmonary lesions will lead to a correct diagnosis in a large percentage of these cases. These factors are as follows:

1. History.
2. Symptoms.
3. Physical signs.
4. X-ray evidence.
5. Tuberculin test.
6. Laboratory tests—sputum examination—blood Wassermann, etc.
7. Exclusion of other causes.

These factors need no further comment on my part; they are familiar to all of you, their relative importance in the various lesions will be pointed out at the appropriate time.

However, the tuberculin test may be disposed of here. It is of great importance in the differentiation of lesions in children, and is used principally for this purpose. Our present knowledge of this subject may be summed up with the statement that —a positive tuberculin indicates a tuberculous infection in that individual, and from this standpoint has a definite value when used with other findings. No single factor is conclusive, and in most instances it is necessary to take them all into consideration before arriving at a correct diagnosis.

First consideration will be given to a brief outlining of the more advanced lesions, namely, chronic lung abscesses and chronic bronchiectasis.

CHRONIC LUNG ABSCESS

The most important *etiological* factors are tonsillectomy, operations upon the accessory nasal sinuses, and dental extractions. The first seems to be a most common cause according to figures given by Gordon,[2] who reviewed the literature in 1931. There are a small percentage of cases that follow surgery elsewhere in the body, although the wounds may be clean ones. An apparently increasing number of cases is being observed following influenza pneumonia, broncho-pneumonia, lobar pneumonia and broncho-pneumonia due to Friedlander's bacillus.

More attention is being paid to pyorrhea alveolaris as a possible source of infection, attention having been focused upon this subject by Crowe and Scarff[3]. Foreign bodies may cause obstruction of a small bronchus or bronchiole, with resultant abscess formation. There are many other etiological factors, but those already mentioned seem to be the most important ones.

Pathology: This is essentially irregular areas of consolidation with central necrosis and a tendency to irregular infiltration of the surrounding tissues.

A search of the literature brings out some rather interesting facts concerning the location of lesions.

*Read before the Albemarle Medical Society, May, 1933, when at Blue Ridge Sanatorium, Charlottesville, Va.

The highest incidence is in the lower lobes. However, Whitmore,[4] Flick,[5] and others have reported series of cases in which the majority of the lesions were said to be in the upper lobes. It is interesting to note that Emerson[6] believes that lung abscess has been diagnosed pulmonary tuberculosis often in the past because of its location in the upper lobe. These facts add further difficulties to the diagnostic problem, as was illustrated by cases reported by Stafford[7] in which tuberculosis in the upper lobes was diagnosed lung abscess. It is our experience at Blue Ridge Sanatorium that the majority of the lesions are located in the lower lobes and on the right side. However, in view of the fact that the upper lobe on the left in front reaches to the base, and on the right in front extends to the fourth rib, it can readily be seen how many abscesses may be found in these regions.

Symptoms: There is a wide variation between the probable time of infection and the onset of symptoms, which may be from five days to months. Pain in the chest, dry cough and a low grade fever are the most common early complaints. With progression of the lesion the symptoms increase and there is frequently a history of a severe coughing paroxysm with a sharp pain in the chest and a feeling as if something has broken loose; this is followed by the expectoration of a large quantity of pus and some fleshy material. After rupture of the abscess, the course is usually more progressive, with loss of weight, anemia, fever, expectoration of large quantities of pus, and there may be "frank" hemoptysis or blood streaked sputum. In some instances the abscess ruptures into the pleural cavity, and then we have the complicating signs and symptoms of an empyema.

Physical Signs may be diagnostic or of very little value, depending upon the site of the lesion. When peripherially located, there are likely to be signs of consolidation with or without cavity formation; when centrally placed, there may be only a suppression of the breath sounds with or without musical rales.

Stereoscopic X-Ray Films are of great help in localizing the lesion and in deciding what course to follow in the treatment. The picture produced is fairly typical, showing a somewhat circumscribed consolidation usually irregular in outline, with or without cavity formation, and most frequently located in the lower half of the lungs. It is to be noted that not infrequently there is more than one lesion.

Diagnosis of lung abscess calls for a consideration of all of the previously mentioned diagnostic factors. The history is invaluable, especially in the cases of considerable duration. The physical signs, as pointed out, may or may not be of value. The X-ray gives us great assistance here, but is not infallible. Sputum examinations and cultures are of utmost importance in that they help to eliminate the presence of tuberculosis as well as being of value in determining the nature of the infection present.

Treatment: Since it is not my purpose to discuss this phase of the subject, I wish merely to point out that Spector,[8] Alexander and Buckingham,[9] and others[10] emphasize the fact that proper medical care instituted early is frequently superior to surgical intervention. However, surgical treatment, if necessary, should not be delayed.

BRONCHIECTASIS

Allen Krause[11] has said, "The curability and amelioration of tuberculosis at advanced stages are vastly ahead of those of bronchiectasis in its earlier phases." Surely the latter disease is certainly more offensive. Undoubtedly bronchiectasis in its earliest stages is far more prevalent than is realized, and the above statement, with which I agree in its entirety, should spur us on to greater interest in this subject and thereby earlier diagnosis.

Etiology: Bronchiectasis is essentially a secondary condition, with many predisposing and exciting factors. Influenza, pneumonia, measles, scarlet fever and whooping cough may be the exciting cause of pulmonary changes which eventually become a true bronchiectasis. Accessory nasal sinus disease, chronic tonsillitis, pyorrhea alveolaris, and repeated upper respiratory infections may produce a chronic bronchitis which is a common forerunner of bronchiectasis. Unrecognized foreign bodies are responsible in many cases for the development of lesions. There are numerous other etiological factors, but the above are apparently the most common.

Pathology: Degenerative changes in the mucosa, elastic and muscle tissue of the bronchi, resulting in saccular, fusiform or cylindrical dilatations, are the most outstanding features. These are, of course, accompanied by changes in the lung parenchyma, varying from diffuse fibrosis to literally multiple

communicating abscesses of the saccular variety. Scattered small areas of pneumonitis are not uncommon. These lesions are predominantly located in the lower lobes, but have been described in the upper ones; when located in the latter position, it is usually coexistent with tuberculosis.

Symptoms in "frank" cases are often diagnostic. Paroxysmal coughing with expectoration of large quantities of characteristic sputum, which, when placed in a conical glass separates into three layers —a top frothy layer, a middle layer which is a thin, turbid, greenish fluid, and at the bottom a layer consisting of pus, cellular debris, bacteria, fatty accids and hematoiden crystals.

Hemoptysis is not an uncommon accompaniment of bronchiectasis, and occasionally may be in alarming quantities. In the more advanced cases the patient is usually anemic, and in addition to his cough and expectoration, which is usually worse in the morning, he complains of loss of weight, strength and appetitie. Dyspnea on exertion and pleurisy pains are frequently encountered.

Physical Signs: As in lung abscess, the physical signs vary with the pathology and are often misleading as to the extent of the disease. In the early cases, the signs may be those of a chronic bronchitis; in the more advanced cases, signs of consolidation, with or without cavity formation, may be present, depending upon whether the bronchi have recently been emptied. Bubbling rales are present in many instances, and musical rales are found in nearly all cases. Clubbing of the ends of the fingers is often noted, and is practically always present in the advanced cases.

X-Ray Examination may show ringlets along the basal trunks with or without multiple small areas of consolidation. There may appear to be, in the more advanced cases, multiple abscess cavities. In the very early cases iodized oil injections and stereoscopic films are usually necessary before a definite diagnosis can be made.

Diagnosis: With cases presenting the advanced stage, a carefully taken history will lead to a correct diagnosis. Physical signs, X-ray pictures, and sputum examinations help to confirm the diagnosis.

However, it does not appear to me that a diagnosis of bronchiectasis at this textbook picture stage of the game is of any particular credit to the physician and the patient has passed a stage at which he could best be benefited with proper treatment. Indeed, if the patients but knew the technical terms they could diagnose their own cases.

Treatment: Postural drainage, general hygienic measures, such as diet, rest, etc., combined with bronchoscopic drainage, and surgery in properly selected cases, briefly summarizes this phase of the subject. Prophylactic treatment is by far the most efficacious and the most satisfying both to the patient and his physician.

Having reviewed what is often the end-result of unrecognized early pulmonary lesions, I wish next to call your attention to a number of conditions which may be grouped under chronic bronchitis and suppurative pneumonitis. Indeed, as Young[12] has said, whether you term them chronic bronchitis, recurrent bronchitis, unresolved pneumonia, recurrent interstitial pneumonia, or fibrosis of the lungs with or without bronchiectasis, they are all different stages and varieties of the same disease.

CHRONIC BRONCHITIS

This is rarely a primary disease. When primary, it is usually due to the inhalation of some irritating substance incident to the occupation of the individual. Such a bronchitis may progress to a definite bronchiectasis if proper corrective measures are not instituted early.

In the past few years the literature has been filled with pleas for greater recognition of the fact that diagnoses of chronic bronchitis should suggest some underlying pathology. Meekins,[13] Krause,[11] Cooper,[14] and many others have clearly demonstrated that what is from the physical examination a mild bronchitis may be a rather extensive pneumonitis or bronchiectasis.

Etiology: The most common etiological agents are infections of the accessory nasal sinuses. Manges,[15] Dunham,[16] and many others[17, 18] have given excellent descriptions of the pulmonary changes which either accompany or are the result of sinus disease. The sinus infection may be a "silent" one in that there are no symptoms referable to it, or there may be persistent drainage from a long standing infection. It is to be noted that chronic infections in the sinuses may be the result of intranasal obstruction due to spurs, malformed turbinates or deviated septa, and there does not necessarily have to be an empyema of one of the sinus cavities.

There are several accepted routes of infection to the lungs. Aspiration of infectious material seems to be the most prominent. Quinn and Meyer[19] and McLaurin[20] have experimentally established in human subjects that material may be aspirated from the upper respiratory tract. Others[15, 17] have expressed themselves as believing this to be the usual route of infection.

Krause[11] and Young[12] have reported cases in which they believe the pulmonary infection to be the result of direct extension from the upper respiratory tract, thus starting a focus of infection in the lungs which may or may not manifest itself as a pneumonia at this time. The upper respiratory infections that accompany the infectious diseases of childhood, especially measles and repeated attacks of sinusitis, seem to be the chief offenders. Jackson[21] and McPhedrin[22] have expressed themselves as believing this to be a frequent route of infection.

Whooping cough is a common cause of chronic pulmonary lesions which usually begin with bronchitis. Apparently ruptured alveoli and dilated bronchi plus a superimposed infection are the principal factors here.

Undoubtedly in many of the infectious diseases and repeated coryzas an unrecognized accessory nasal sinus infection plays an important role.

Still a third route of infection, the lymphatic system, is advocated by some workers. However, a search of the literature does not reveal any satisfactory proof of any connection between the lymphatics of the upper respiratory tract and oral cavity and those of the lungs. Recent evidence[23] seems to confirm existing belief that the lymphatics of the former areas drain into the subclavian veins at the root of the neck. Mullen[24] believes that material enters the circulation here (the subclavian veins) and is deposited in the lungs, and thus sets up an infectious process. To me, this does not seem to be a logical conclusion, in view of the predominance of the lesions in the lower halves of the lungs and not a generalized distribution, as would be expected.

What has been said concerning the accessory nasal sinuses, etc., also applies to chronically diseased tonsils and pyorrhea alveolaris. Although many doubt that these infections play any part as a source of infection, I am convinced from observation that they do, and I became more firm in my convictions when I learned that such men as Jackson,[21] Alexander and associates,[9] and others,[14] feel that the tonsils and infections about the teeth are important factors in the production of chronic pulmonary infections.

Influenza is a fairly common cause of chronic pulmonary disease, and will be discussed in detail later.

It is interesting to note that neither Cecil's nor Osler's textbooks on Practice of Medicine specifically mention oral sepsis, nasal sinusitis, or the infectious diseases of childhood as etiological factors of chronic bronchitis. They deal principally with those conditions that are the result of senile changes and those secondary to such conditions as cardiac and renal disease.

Patholoy: The patholigical changes are noted principally in the lower lobes, and the lesions are bilateral in the majority of cases.

It is interesting to note with reference to pulmonary basal lesions that, up to the present time, according to Gordon,[25] not one negro has been bronchoscoped at the Jefferson Hospital in eight years for such a lesion. All cases have proven to be tuberculosis, although in many instances the X-ray picture resembled the non-tuberculous lesions seen in the white race.

The earliest structural changes noted are glandular enlargement and fibrous tissue deposits in the root regions. Between the above mentioned changes and the changes of an advanced bronchiectasis many types of lesions may be found; a diffuse fibrosis, peribronchial infiltration, which may be limited to the bases or generalized, and areas of pneumonitis, are some of the common findings.

Symptoms: The most outstanding feature of the symptoms of chronic bronchitis is the disproportion between them and the extent of pathology. The patient is usually fairly well nourished, and in what he considers a good state of health except for his present complaint.

In the very early cases a non-productive cough, due to glandular enlargement or slight bronchial irritation, is the only complaint. Unfortunately, due to the sparsity of symptoms, few cases are seen at this time.

With progression of the lesion the cough becomes more productive and more disturbing. At first this is likely to be seasonal, but later it becomes perennial. Unfortunately, many of these cases are passed

up as a mere bronchitis, without further investigation, and, as result, other symptoms, such as loss of weight and vitality, anemia, low grade fever develop and proceed on to a typical textbook picture of bronchiectasis.

Luckily for some of these patients, hemoptysis or blood streaked sputum appears, and a diagnosis of tuberculosis is frequently made. Often it remains for a consultant to correct the diagnosis, locate the cause, if possible, and institute proper therapy.

Many of these patients go for months, or even years, under the diagnosis of a bronchitis, or are undiagnosed until pneumonia becomes superimposed upon the existing lesion. A failure of the symptoms to completely subside, or the persistence of physical signs directs attention to the basal lesion. In consequence, the lesion is attributed to a failure of the pneumonia to completely resolve; whereas the pneumonia has merely served to focus attention upon something that has been existing and undoubtedly progressing for some time. Often, especially in children, the exact status is not recognized at this time, due to the absence of physical signs, and these children are labeled as being frail and undernourished. There may even be several attacks of pneumonia or recurrent acute coryzas before the condition is properly recognized. It is interesting to note that often in the early cases between acute exacerbations, symptoms referable to the chest are conspicuous by their absence. Due to the onset of a low grade fever and the persistence of malnutrition and other evidences of frailness, an incorrect diagnosis of tuberculosis may be made. Again, a failure to recognize the exact state of affairs may result in the development of an advanced bronchiectasis.

Physical Signs: As has been pointed out before, these are frequently conspicuous by their paucity, and are not infrequently misleading as to the extent of the pathology. When present, the most outsanding features are a prolongation of the breath sounds, an impairment of voice conduction, and varying quantities of musical rales. In the more advanced cases mucous rales may be noted. A pleural rub is not an uncommon finding.

X-Ray Findings: As Willis[26] and Austrian[27] have pointed out, in the very early cases nothing abnormal is seen on the roentgenogram. Manges[28] has given a very concise description of the various findings, which are as follows: (1) Thickening at the roots of the lungs by glandular and other lymphatic enlargement; (2) General peribronchial thickening; (3) Tissue changes in the dependent portions of the lungs and pleura. The tissue changes manifest themselves by a thickening of the basal trunks, with or without varying degrees of pneumonitis. While these changes are principally described as resulting in case with accessory nasal sinus disease, I believe they are equally descriptive of the lesions from the other etiological factors mentioned.

Diagnosis: I am sure you will all agree with me that all of our diagnostic factors should be applied to these cases. The history is a valuable aid and gives suggestive evidence of what to expect. The physical signs may or may not reveal anything, but are usually at least suggestive of some pulmonary pathology. Stereoroentgenograms may present one of the pictures described, or, as pointed out in the very early cases, nothing of significance. A repeatedly negative tuberculin test is of considerable value, especially in children, and of some help in adults. Multiple sputum examinations are of utmost importance in that they help to elminate tuberculosis, and, as in bronchiectasis, are often of value in directing the treatment.

A consideration of all of the factors is essential, especially the history, if we are to arrive at a proper conclusion. I cannot lay too much emphasis upon the necessity of recognizing these lesions in the early cases and their differentiation from tuberculosis.

In reality, these cases are potential bronchiectasis, and in many instances are really an early bronchiectasis; although they do not possess the typical textbook picture with a characteristic sputum and extensive physical signs. A recognition of these facts will lead to an earlier diagnosis at a time when the best results can be secured from proper treatment.

Treatment: The institution of therapeutic measures employed in the treatment of tuberculosis, namely, rest, adequate diet and proper hygienic measures, are of considerable value. The elimination of foci of infection in the mouth and upper respiratory tract, and the breaking of contact with individuals who have upper respiratory infections is of value. In the more advanced cases, postural and bronchoscopic drainage in properly selected cases gives good results.

INFLUENZA

This malady not infrequently leaves pulmonary changes which may eventually terminate in bronchiectasis or lung abscess. A low grade pneumonitis or a chronic bronchitis are not uncommon findings.

Friedman[29] pointed out, in 1918, that the broncho-pneumonia complicating influenza presents an X-ray picture not unlike those of early pulmonary tuberculosis, and that a diagnosis of tuberculosis in individuals who have had influenza or influenzal pneumonia, should be made with great hesitancy even months after apparent recovery, and then only with as positive evidence as can be obtained, and this is equally true now.

Symptoms and Signs are essentially those described under chronic bronchitis with an antecedent history of influenza.

Roentgen Ray Findings are likewise similar to those given for bronchitis, and often have the appearance of an exudative tuberculosis lesion. In those cases in which an abscess develops, the lesion is usually located close to the hilum;[30] otherwise, the picture presented does not differ from that described under chronic lung abscess.

Diagnosis: This requires the same study as previously outlined. Once more, too much cannot be said against passing these cases by as a mere bronchitis or residuals of influenza that are expected and will soon clear up.

Treatment: This is the same as has been previously outlined.

CHRONIC LUNG CONDITIONS FOLLOWING FRIEDLANDER'S PNEUMONIA

Although a pneumonia due to Friedlander's bacillus is often fatal, a rather interesting series of cases has been reported by Collins and Karnblum.[30] These cases were followed in many instances through the acute stages to chronicity. It was noted that they passed through a rather definite cycle of broncho-pneumonia, pseudo-lobar pneumonia, multiple abscess formation and cavitation, and extensive fibrosis. It is in the last two stages that these cases are encountered as chronic pulmonary lesions. It is interesting to note that the authors observed that the pneumonic lesions resemble closely those seen in influenzal pneumonia. The cavities are thin walled and located peripherally, as distinguished from those near the hilum following influenza, with resultant abscess formation.

Symptoms do not differ from those of similar lesions. Hemoptysis was noted as a common complaint.

X-Ray Findings are not conclusive, but are often quite suggestive of the nature of the pathology.

Diagnosis rests upon a consideration of the history, X-ray picture, and the finding of large quantities of Friedlander's bacilli in the sputum.

Treatment: There are no specific measures for this particular infection; therefore, what has been said before suffices.

ASTHMA

These considerations would not be complete without mentioning asthma. Although this disease has come to be recognized as due in the majority of instances to a hypersensitiveness to substances other than bacteria, many cases are found that present pulmonary changes like those described under chronic bronchitis. Most of these cases show evidence of a chronic upper respiratory infection or oral sepsis. Chronic accessory nasal sinus disease has been the most frequent offender.[31, 32]

These facts should lead to an investigation of the above mentioned areas in all cases with asthma. Although they may not be primary offenders, such infection may be the cause of poor result with specific desensitization and elimination therapy.

BRONCHOMYCOSIS

In the past few years interest in fungi disease has been revived. Apparently such infections are not as rare as many of us had believed.

It is interesting to note that as late as 1925 Hiss and Zinsser's[33] Textbook of Bacteriology did not mention pulmonary infection with monilia. Osler's text, in 1928, gives a short paragraph to broncho-moniliasis, and Cecil's text, as late as 1928, does not even mention bronchomycosis or broncho-moniliasis.

Etiology: Various strains of monilia, actinomyces, streptothrix and blastomycoses may produce pulmonary changes. There are a few individual characteristics of the infections which sometimes aid in the clinical distinction; therefore, they will be considered individually.

MONILIA INFECTION

The mode of infection with this organism is thought to be by inhalation.

Pathology: Grossly, it is difficult to distinguish the changes from those produced by bacteria. There may be a widening of the root region with peribronchial thickening, interstitial fibrosis, varying degrees of consolidation, or an extensive bronchiectasis.

Microscopically, there may be pseudo tubercle formations, fibrosis, granulation tissue and necrosis. Any combination, or all of these changes, may be found.

Symptoms: There are clinically two very definite responses to this infection—a mild and a severe one. In the mild cases a cough with a mucopurulent sputum is usually the only complaint. This type may be cured spontaneously or progress into the severe form, which is indistinguishable clinically from advanced tuberculosis. Between the two extremes there are cases which resemble in all respects moderately advanced tuberculosis. Fever, cough with expectoration, which is frequently blood streaked, and emaciation, are prominent features of the moderate and severe forms. The course is usually rapidly progressive.

Physical Signs: Those of a chronic bronchitis, bronchiectasis, or extensive consolidation, with or without cavitation, may be present. However, an outstanding feature of these cases is that the pathology is frequently far more extensive than would be suspected from the physical findings.

X-Ray Findings: These are not diagnostic. The lesions may resemble chronic bronchitis, tuberculosis, bronchiectasis or lung abscess.

Diagnosis: Since the other diagnostic factors are not specific, this is for the most part a laboratory problem of isolating, culturing and proving the pathogenicity of the organism obtained from the sputum. Proof that the organism is virulent is very important because, as Castellani[34] has pointed out, monilia may be found in the sputum but be nonpathogenic. Utmost care is necessary in examining the sputum, as the organisms, although virulent, may be secondary invaders, especially in cases with tuberculosis.

Actinomycosis

Although there is a small number of cases in which this infection is primary in the lungs, it is usually secondary to lesions about the neck and face. In the former case, infection is believed to be by inhalation; in the latter, by aspiration from the mouth.

The Pathology is inflammatory and suppurative in nature, with the production of varying amounts of granulation and connective tissue surrounding multiple areas of abscess formation.

The Roentgenogram is not diagnostic, and is not unlike that described for monilia; however, the lesions are predominantly basal in location.

Diagnosis: In the primary cases this depends upon eliminating other etiological agents and the finding of actinomyces in the sputum. This disease should be suspected in any case with an actinomycotic lesion with pulmonary symptoms.

A pitfall awaits us here, as elsewhere, in that Lord[35] has isolated actinomyces from normal teeth and the tonsillar crypts of patients without evidence of the disease; therefore, we must be sure the material expectorated is from the lungs.

Streptothrix

This fungus usually causes a primary infection in the lungs, and produces pathological findings not unlike those of actinomycosis. Likewise, the lesions are predominantly basal in location, but may be elsewhere.

Symptoms are essentially the same as those of monilia.

Prognosis is much worse here, as septicemia seems to be a frequent complication.

Diagnosis offers the same problem as do other fungi infections. However, great care must be exercised in examining and culturing the sputum as the mycelia are acid fast, and may be mistaken for tubercle bacilli, or *vice versa*.

Blastomycosis

Pulmonary infections with this organism, like actinomycosis, are practically always secondary, the primary lesion usually being a cutaneous one.

The Pathology is like that of actinomycosis and streptotrichosis, but with a greater tendency to multiple small abscess formations.

The X-Ray Findings and Symptoms do not differ from those of actinomycosis, except the greater likelihood of finding many small abscesses.

The Diagnosis should be suspected in any person with a blastomycotic cutaneous lesion presenting pulmonary symptoms. The final decision, of course, depends upon finding the fungus in the sputum.

It can be seen from the above consideration that fungi infections of the lungs offer us another diagnostic problem in the consideration of chronic pulmonary disease, especially those diseases that predominantly involve the lower halves of the lungs. These diseases also serve to further emphasize the necessity for careful and repeated sputum examinations.

Treatment: This briefly consists of the use of iodides, X-ray therapy, and autogenous vaccines.

SYPHILIS OF THE LUNGS

This brings up the subject about which there seems to be considerable controversy; syphilologists and roentgenologists are on one side, and some pathologists and clinicians on the other. I shall merely attempt to present both sides of the question.

The clinicians and pathologists side is adequately summarized by Lawrason Brown[36] in the following statement, "There has never been any question about the occurrence of gummata of the lungs, though they are not a frequent occurrance. The same thing is true of white pneumonia of infants. But about other conditions attributed to syphilitic disease much doubt exists, especially in the mind of the pathologists. It should be recalled, however, that Warthin always maintains that syphilis produces in the lungs some degree of fibrosis, which, however, could not in most cases be directly connected with syphilis." He further states[37] that, "The therapeutic method of diagnosis is far from certain in pulmonary conditions in those with syphilis."

However, McLester[38] has said that while syphilis of the lungs is considered as a rare disease, evidences are accumulating that it is more frequent than is supposed.

Carter,[39] in 1920, believed that syphilis of the lungs, as evidenced by the therapeutic tests, was not rare.

Greer[40] has advanced the opinion that pathologists hesitate to make a diagnosis of syphilis of the lungs because of the similarity to tuberculosis, and, consequently, in the absence of treponema pallidium in the lesion, they prefer to make the more common diagnosis.

He has described three groups of lesions in the lungs which he believes result from syphilis. These are as follows: (1) Diffuse local induration, which appears as an interstitial process, observed particularly in the peri-bronchial and interlobar connective tissues which runs through the lungs from the hilus to the base in the form of strands. Lesions are most frequent in the right lung. Indurative lesions are usually associated with bronchiectatic areas. (2) Gummas are less frequent than the indurative type of syphilitic lesions in the lung, but, when found, are usually associated with the latter. The site of location is usually near the hilus or in the lower lobes. The size of this type of lesion is quite variable. (3) The so-called "white pneumonia" of infants.

Symptoms: An outstanding feature here is the disproportion between the symptoms and the pathology, the former being far less than would be expected from the physical signs. Otherwise, the manifestations are similar to those of chronic bronchitis or tuberculosis, and in some cases bronchiectasis.

It must be borne in mind that in the secondary stage of syphilis there may be a coexistent bronchitis. Lesions elsewhere about the body will usually lead to a correct diagnosis.

The Diagnosis of syphilis of the lungs, according to this group, depends upon the elimination of other causes, positive Wassermann tests, syphilis elsewhere in the body, and the response of the lesion to the therapeutic test.

SUMMARY

The most outstanding feature of all the nontuberculous pulmonary lesions is the fact that they are predominantly in the lower halves of the lungs. It has been noted that they may involve the upper parts of the lungs where tuberculosis predominates, and it must further be borne in mind that tuberculosis may occasionally be located in the base without any apical manifestations.

Chronic lung abscess and bronchiectasis have been reviewed for the purpose of emphasizing the importance of preventing, where possible, these pitiful maladies.

The diagnosis of chronic bronchitis without proper investigation is discouraged, for undoubtedly many early cases of bronchiectasis and potential lung abscess are being passed up as a mere bronchitis, and their best chances of recovery being lost.

The importance of infection in the upper respiratory tract, about the mouth, and the infectious diseases of childhood and influenza as etiological factors have been pointed out.

Some uncommon causes of chronic pulmonary

lesions, such as Friedlander's pneumonia, the bronchomyces and syphilis, have been reviewed and designated as of being of importance in cases with an obscure etiology.

It is hoped that this paper will serve to refresh our memories with the fact that all chronic pulmonary diseases are not tuberculosis, and, further, to stimulate our interest in properly classifying these lesions, and to the institutions of therapy earlier than has been the case too often in the past.

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THE SURGICAL RELIEF OF PAIN.*

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The first operation for the relief of pain was done for that of tic douloureux of the trigeminal nerve. Mears,[1] in 1884, suggested removal of the Gasserian ganglion for its cure. Soon after this several operations for the removal of the ganglion were described by men such as Horsley,[2] Sir William Rose,[3] Hutchinson,[4] Hartley[5] and Krause.[6] In 1900 Frazier,[7] at Spiller's request, did a physiologic extirpation of the ganglion by resecting the posterior root. This operation was done through the temporal route and it is the type most generally used today. There have been improvements in the technique contributed by Frazier[8] and Adson,[9] such as the preservation of some fibres to the ophthalmic division supplying the cornea with sensation and the saving of the motor root. The mortality at the present time is less than .5 per cent. In 1929 Dandy[10] advocated resection of the root through the posterior fossa which is now used in his clinic. Alcohol injection for trigeminal neuralgia was done by Schlösser[11] in 1903, and since then improvements in the technique have been made by Patrick,[12] Harris,[13] and Härtel.[14] The latter is not a curative procedure but it gives relief of pain for several months or a year.

The symptoms of tic douloureux are characteristic and the diagnosis is seldom difficult. It occurs most frequently in the middle aged and older people. It often attacks the second and third divisions and seldom the ophthalmic branch of the nerve. The pain is described as sharp shooting, stabbing, sprangling, and paroxysmal in character. The attack is set off by chewing, talking, washing, or shaving, any of which may be sufficient to cause a severe explosion of pain. This is different from other pains in the face, which are usually not initiated by such stimuli. The treatment of this condition is an alcohol injection of the peripheral branch involved or on intra-cranial resection of the posterior root of the ganglion. The former gives temporary relief while the latter is curative.

When the pain is due to involvement of the nerve by a growth, or to a true neuritis, there is frequently some degree of anesthesia in the face or cornea. The nerve may be affected in either the middle or posterior fossa of the skull. The treatment consists in the removal of the tumor. If this cannot be done, the posterior root should be resected to relieve the pain. The same treatment is necessary in malignant tumors of the naso-pharyngeal region where the peripheral branches of the nerve may be involved after their exits from the skull.

Carcinoma of the face, mouth and jaws is a frequent cause of intractable pain and suffering. While morphine and other narcotics may give a certain amount of relief, they soon become inadequate. There is always some suffering in the interval between the doses of the drug and after a while a tolerance will be established with little relief of the pain. The movement of the jaws and the passage of food over the ulcerated area may be very painful, so that the patient soon reaches the stage when he would rather starve than suffer the pain of eating. An alcohol injection of one of the peripheral branches of the nerve may give complete and continuous relief of pain. They may then eat an adequate meal in comfort, obtain sufficient amount of rest, and put on weight and strength to fight the disease. Everyone who treats carcinoma of the mouth and jaws knows the suffering the patient endures after the treatment and during the healing process. An alcohol injection before the treatment is begun may permit the operation to be performed without any further anesthesia and render the dressings and convalescence free of pain.

When the carcinoma involves the tonsillar region or the posterior part of the tongue, the pain will not be relieved by alcohol injection or operation on the fifth cranial nerve. In this case it will be necessary to resect the glosso-pharyngeal nerve which is best attacked inside the skull. It has been shown by Doyle,[15] Adson,[16] Dandy,[17] Fay[18] and Grant[19] that the pain in the pharyngeal region may be relieved by this operation. It is done through a unilateral cerebellar approach with very little risk. At the

*Read before the Richmond Academy of Medicine, January 23, 1934.

same time, should there be pain in the fifth cranial nerve distribution, the posterior root of the nerve may be cut in the posterior fossa. Sometimes there is invasion of the tissues of the floor of the mouth and neck with metastasis to the glands. In order to relieve this pain, Fay[18] suggests a rhizotomy of the upper three or four cervical posterior roots. This may be done at the time the glosso-pharyngeal nerve is cut by extending the incision downward and doing a hemi-laminectomy of the atlas and axis. Instead of the posterior root operation, as suggested by Grant,[19] it may be just as effective in relieving the pain and less hazardous to resect the cervical plexus in the neck as it comes across the posterior border of the sterno-mastoid muscle.

To relieve the pain in the extremities and body below the neck there is sometimes done a resection of a sufficient number of posterior roots to render the affected area anesthetic. There are several objections to this operation, namely: first, it destroys all forms of sensation which is especially undesirable in the upper extremities; second, it often requires a laminectomy of five or six vertebrae to cut six roots which may be necessary to make anesthetic an area involving three or four dermatomeres because of over-lapping of contiguous roots; third, it sometimes does not relieve the pain for the following possible reasons—a sufficient number of roots may not have been cut; there may be antidromic sensory fibres in the anterior roots, as suggested by Claude Bernard[20]; and Foerster[21] stated that afferent impulses may pass through the sympathetic nervous system along the ganglionic chain to enter the spinal cord at higher levels.

Sympathectomy has been used for the relief of pain since Jonnesco[22] first resected the cervical sympathetic chain in angina pectoris. Coffey and Brown[23] showed that the pain may be relieved by resection of the superior cervical ganglion and its branches. More recently Swetlow[24] and White[25] have attempted to block the afferent impulses from the cardiac and aortic areas by an alcohol injection of the rami communicantes Since this procedure blocks the afferent fibres, it is considered more rational than operations on the cervical chain which carry only efferent fibres.

Adson and Rowntree[26] have shown that sympathectomy and sympathetic ganglionectomy in different vaso-spastic diseases and chronic arthritis will often improve the symptoms and relieve the pain. It is not known whether the relief of pain is due to interruption of pain fibres or to paralysis of the vaso-constrictors causing improvement in the circulation. The pathways of the pain fibres in the sympathetic nervous system are not clearly understood, and surgical measures done primarily to interrupt them for the relief of pain must be considered as empirical procedures.

All the pain fibres entering the spinal cord cross over to the antero-lateral column to ascend in the spino-thalamic tract to their destination in the thalamus. Its location was proved by Spiller[27] in 1905 when he had a patient with loss of pain and temperature sense in the legs, and at autopsy there was found a small tubercle limited to the antero-lateral tract in each side of the cord at slightly different levels. Based on this fact Martin,[28] at Spiller's request, in 1911, performed the first chordotomy on a patient for the relief of pain in malignancy of the lower spine. In 1912, Tietze,[29] at Foerster's request, did the operation independent of the Americans for the relief of pain of gastric crises. In 1920, Frazier[30] reported six cases on whom he had done chordotomies with relief of pain in five. He deserves the credit for clearly outlining the indications for the operation and for putting it on a sound basis. He stated that chordotomy should be done in the middle or upper dorsal region, and that it was only applicable for the relief of pain in the lower extremities and lower part of the body; that to do the operation in the cervical region may endanger the respirations by injuring some of the fibres to the phrenic nerve distribution. Since Frazier's report, neurological surgeons have performed the operation with success in relieving the intractable pains in the lower part of the body in the majority of cases. In 1932, Foerster[21] recommended unilateral chordotomy at the level of the second cervical segment in cases of painful conditions of the upper extremity. He did not advise a bilateral high cervical chordotomy because of the possibility of interference with respirations in case some of the motor fibres were injured. In one case, however, he did a bilateral cervical chordotomy, but the section was done on each side at separate operations. In 1933, after Foerster's report, Peet, Kahn, and Allen[31] reported a case of bilateral chordotomy at the level of the second cervical segment on the

left and at the eighth cervical segment on the right. The operation was done on a patient for the relief of severe pain associated with chronic arthritis of the upper and lower extremities. The operation relieved the patient of the pain so that he was able to be up in a chair in a few days and take the exercises and baths necessary in the treatment.

At the present time chordotomy probably offers the best chance of relieving the patient of these intractable pains in the extremities and body below the neck. It can be done by the removal of the laminae of two or three vertebrae, preferably under local anesthesia, since sensory tests may be made after each incision in the cord to determine if sufficient pain fibres have been cut to give the desired analgesia. The dentate ligament divides each half of the cord into equal antero-posterior parts. It is used as an important landmark in making the incision, and it may be grasped with a pair of forceps for rotating the cord. The incision is made with a sharp pointed knife, starting just in front of the dentate ligament, to a depth of three to five millimeters, depending upon the region in which the chordotomy is done. The incision is carried forward to the anterior root, thereby severing the fibres carrying pain and temperature sense from the opposite side of the body.

If care is taken in making the incision anterior to the dentate ligament, there is little or no danger of injuring the pyramidal tract situated in the posterior lateral half of the cord. There is loss of pain and temperature sense on the opposite side in unilateral and on both sides of the body in bilateral chordotomy. There is preservation of the sensations of touch, position, and stereognosis, which is of special importance in certain parts of the body.

Finally, chordotomy is undoubtedly the operation of choice in relieving the intractable pains of malignancy and many other painful conditions in the body and extremities. For angina pectoris there may be done an alcohol injection of the rami communicantes from the second to the fifth dorsal intercostal spaces on the affected side. For the relief of pain in malignancy of the mouth and jaws and of tic douloureux an alcohol injection of a peripheral branch or an intra-cranial resection of the posterior root of the Gasserian ganglion may be done. An intracranial resection of the glosso-pharyngeal nerve may be necessary to relieve the pain in the throat associated with malignancy and the severe neuralgias. For the relief of the pain in the neck there may be done a rhizotomy of the upper three or four cervical posterior roots on the affected side, or preferably a resection of the cervical plexus in the neck at the posterior border of the sterno-mastoid muscle.

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SOME NATIONAL PROBLEMS OF TODAY THAT ARE OF SPECIAL INTEREST TO THE MEDICAL PROFESSION.*

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In this new era in which we are now living it is interesting to note the close relation of the medical profession to many of the National problems of today. Never before in all history has the profession felt to as great extent the effects of the changing condition of the times. This fact brings to every physician the realization that "the old order changeth" and that in the future problems must be met and solved in a manner different to that of years gone by.

Let us review briefly some of the National health and economic issues of the day that are of vital interest and importance to our society and to the profession as a whole.

Due to continued social unrest and economic distress, the inevitable results of every depression, a subject of great moment still is and will be for sometime to come that of rehabilitation. It is conceded that conditions generally in the industrial world may be improved, if and when the National Recovery Act, Forest Conservation, and other governmental programs work out successfully, but, if the health, morale and financial condition of the people are to be completely restored, an intensive and adequate program of health education, mental hygiene and economic relief must be carried on.

*Presidential address before the Southwestern Virginia Medical Society at its semi-annual meeting in Wytheville, September 15, 1933.

Especially should we safeguard the health of our children, the citizens of tomorrow. The Children's Bureau of Labor recently reported that "one-fifth of all children in the United States are showing the effects of poor nutrition, inadequate housing and lack of medical care." This estimate is based on figures obtained in several large cities.

A government survey committee reported several months ago that two hundred thousand youths, most of them less than twenty years of age, are roaming the United States in search of a living. This condition is a direct challenge to those agencies which have the welfare of the youth of our land at heart. To be commended are interested citizens who are endeavoring with governmental help to establish concentration camps for these migratory youths, where, in addition to physical and moral training, they may receive a vocational training that will help them to become self-supporting citizens instead of a menace to society.

Of equal concern is the fact that an army of women and girls estimated at two hundred and fifty thousand are adrift in our country today. Before the depression most of these older women were self-supporting but, having reached the end of their resources, are obliged to appeal to charity, while the younger ones leave home because there is no room for them. This, of course, constitutes both health and social problems.

Little has been noted in the press recently in regard to the cost of medical care. This subject undoubtedly has had the thoughtful consideration of all our members, so that we as a component society of the State Society may act intelligently and concertedly on this subject should the need arise.

According to the American Medical Association, which has made a thorough study of the subject, there is an ever-increasing tendency on the part of certain agencies to promote new forms of medical practice, such as forming corporations, ostensibly for the health and welfare of the people but in reality for the monetary gain for the promoters themselves. It behooves any physician who is planning to affiliate with a medical corporation of any kind to first inform himself fully as to its policies.

The over production of doctors need hardly be mentioned. The concensus of opinion as to the remedy for this condition seems to be that colleges and universities accept only a limited number of students and only those best qualified to become leaders in their profession. Colleges can no longer handle the rapidly growing number of students seeking professional degrees. It is said that the medical schools of the United States and Canada are not prepared to admit more than seven thousand of the sixteen thousand candidates who desire to enter this autumn.

The same situation is found in the field of nursing. A year ago many of the states advocated the closing of nurse's training schools, the state of New York alone closing six hundred. A recent survey of fourteen hundred nursing schools in the United States was made by the National Grading Committee. It was stated that Virginia schools even during the period of severest depression have made many advances in the educational requirements of student and graduate nurses, but that practically all of our nursing schools have a long way to travel before they attain the goals set for them by the Grading Committee.

Statistics show that in spite of the depression there was a decrease in the death-rate in our country in 1932. On first thought, this is encouraging, but we should not be too sanguine, for experience here and in all countries effected by a depression has taught us that the bad after-effects are felt for years to come. Obviously there are many reasons why this should be so, such as malnutrition, postponed medical, surgical and dental care and others too numerous to mention here.

And, now, what of the economic status of the profession? The problems confronting the doctors have been summed up in an interesting and enlightening article by Dr. B. T. Beasley, of Atlanta, Ga., in the *Journal of the American Medical Association,* and are given here verbatum:

First. There is a decreasing demand for paid medical service.

Second. Preventive measures, increasing charity service and competitive practice of medicine by municipalities, states, the Federal government and corporations have reduced paid service by at least 50 per cent.

Third. There is an over-production of medical men.

Fourth. There is a great increase in efficiency and capacity of each individual doctor to render service;—one well-trained doctor should do the

work of two poorly trained ones, and with modern facilities he can do the work of many under the older order of things.

Fifth. The present financial crisis has stimulated the medical man to take stock of his status and analyze the situation in commercial terms and apply the same laws that control supply and demand or production and consumption to his case, thus arriving at the conclusion that the only hope for the medical man is to make the production of doctors in the future conform to the law of supply and demand. This is the only way to control state medicine. This is the only way to compromise with charity service. This is the only way to solve the problem of the high cost of medical care. This is the only way to keep medical men out of the bread line in the future.

These, in brief, are a few of the problems that confront the medical profession today. May we individually and fraternally strive to "carry on," as our profession has done from time immemorial, ministering to the people whom it is our duty, privilege and pleasure to serve.

THE INFECTED DIABETIC.*

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The patient with diabetes mellitus is particularly prone to the development of infection. This is due to the lowered resistance of the diabetic tissues, and, in the older diabetic, to the vascular sclerosis present, which is, on the average, ten years more advanced than in the non-diabetic. This lowered resistance is especially noted in those diabetics who are untreated or improperly treated.

All infections in the diabetic, whether acute or chronic, have a harmful effect on the carbohydrate metabolism, and secondarily on the related fat and protein metabolism. There results from the infection a reduced tolerance for carbohydrates, a lessened response of the organism to insulin, a tendency to acidosis, and definite disturbances in water metabolism. Acute infectious processes cause the most marked changes, but chronic infections also alter the metabolic response, though in a less marked degree, and seldom produce an acute emergency.

The influence of chronic, or low grade, infections on the diabetic state is so definite that a large volume of literature has accumulated, giving such factors paramount etiological importance. Several writers, notably European, have contended that syphilis is the cause of most, if not all, diabetes. Tuberculosis has been often blamed, and an article recently read gave the impression that most diabetes was due to infection with the staphylococcus, even though the infection was often of such low grade as to cause no leukocytic or febrile response. Acute or chronic gall-bladder infections so frequently accompany diabetes that they are given etiological importance in the minds of some writers. While possibly an infectious origin of diabetes has not been absolutely disproven, and certain cases manifesting diabetes mellitus do recover, or markedly improve their ability to assimilate carbohydrates on recovery from infection, yet, in the light of present-day knowledge, the syndrome of diabetes could hardly be blamed on infection alone. Undoubtedly, however, it is true that there is a very marked improvement in the diabetic state following removal or adequate treatment of chronic infectious processes.

With acute infections in the diabetic there is a marked exaggeration of the metabolic disturbances, and acute infections of whatever origin in the diabetic patient constitute definite emergencies which are both medical and surgical. The treatment is not isolated and separate. Along with metabolic and dietary regulation must proceed the necessary surgical procedures to rid the patient of his toxic focus.

Acute infection in the diabetic patient markedly lowers the sugar tolerance by decreasing the ability of the tissues to utilize sugar, lowering the glycogen content of the liver and possibly the muscles, altering the acid-base mechanism, and interfering with the water metabolism of the body. All of these are features characterizing the diabetic state, and they

*Read before the Lynchburg Academy of Medicine, Inc., at Lynchburg, Va., February 5, 1934.

are exaggerated by the presence of infection. In most cases adequate insulin, which may mean several hundred units in the twenty-four-hour period, abundance of readily assimilated carbohydrates, and forcing of fluids, occasionally with alkalies, will clear up the urinary sugar, reduce the blood sugar, and prevent or clear up any acidosis present. But the condition will not remain in balance as long as the acute infectious process is present. Where palliative treatment is the only type available, continuation of such measures, with maintenance of the best metabolic balance possible, is the procedure to be followed. However, in infected gangrene, cellulitis, acute appendicitis, and such like surgical disorders affecting the diabetic patient, the prompt removal, or adequate drainage, of the infected focus results usually in a rapid return to the previous mild and easily maintained metabolic balance.

However, mere statement of the fact is far from solving the problem.

The diabetic may have known of his condition and been in relative balance, properly dieted, or on a balanced diet controlled with insulin, or the first intimation of diabetes may be the finding of sugar in the routine urinalysis. In either case there is presented an individual with a serious disturbance in carbohydrate metabolism, having or threatened with an acidosis, who has been further thrown out of balance by the infection present, and who faces an operation requiring an anesthetic. What is to be the procedure? Surgery is required, but, without the proper pre-operative preparation and post-operative care, surgery will be fatal in a large percentage of the cases. What are the essentials in the preparation? First, abundant carbohydrate supply for tissue utilization, to combat acidosis, to combat shock, and to prevent liver damage. Second, sufficient insulin to reduce the hyperglycemia to around normal levels, to balance the carbohydrates administered, to provide liver storage of glycogen, and to speed the tissue utilization of glucose. Third, fluids to combat the dehydration and to correct the disturbed water balance. And, fourth, alkalies, if the acidosis is not sufficiently controlled by the preceding, and to guard against the acidosis resulting from the anesthetic. This preparation, properly controlled by frequent laboratory examinations, may often be completed in a few hours, or, if the time element is of less importance, in a day or two.

The choice of an anesthetic next demands attention. The tissues of a diabetic, particularly the older diabetic, are handicapped by limited blood supply, so local anesthetics must be used with caution. Inhalation anesthesia, especially ether and chloroform, produces a rise in the pH of the blood with a resulting acidosis which lasts often for as long as twelve hours post-operatively. Acidosis causes a lessened response of the organism to insulin, with resulting inability of the tissues to remove the circulating sugar from the blood, and a consequent rise in blood sugar. Excitement, struggling, and muscular effort cause increased epinephrine secretion which releases sugar stored in the liver and so results in a temporary hyperglycemia. Asphyxia increases blood sugar, probably through the production of an acidosis. Nitrous oxide and ethylene cause no acidosis unless asphyxia results. There are no especial contraindications, from the diabetic state alone, to spinal anesthesia, so spinal is the anesthesia of choice, followed in order of desirability, by local infiltration, local with nitrous oxide, ethylene, and very rarely ether.

Post-operatively, abundant carbohydrates, adequate insulin, and plenty of fluids are required. Fluids should be pushed by all available measures, and carbohydrates by mouth, by rectum, and intravenously. Oral feedings should be resumed as soon as the condition of the patient will permit, with the rapid resumption of a properly controlled, metabolically balanced diet, controlled by insulin. The carbohydrate tolerance will increase, and the insulin requirements decrease, once the infectious process is removed or adequately drained.

This procedure cannot be carried out by the internist, or by the surgeon, nor can it be satisfactorily carried out by both working independently. Close cooperation is required. As Eliason says, "In the past the surgeon has erred as far as metabolic treatment is concerned. Now that diabetes reaches the medical man first, he must not err, as has the surgeon previously, to seek early consultative advice. Whereas teamwork always works for the best, here is it imperative. Procrastination, or independence, on the part of either the surgeon or the metabolist works for only one end-result—increased mortality."

808 Allied Arts Bldg.

THE TREATMENT OF INFECTIONS OF THE CENTRAL NERVOUS SYSTEM BY FORCED SPINAL DRAINAGE.*

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We believe that we are justified in using any type of treatment of the infections of the central nervous system which presents the possibility of lessening the immediate mortality and the permanent disability which so often follows the acute and chronic infections of the central nervous system.

In the past five years considerable thought and experimental work have been given to the treatment of infections of the central nervous system by a method known as forced spinal drainage. The principle of this procedure consists in the forcing of fluid through the choroid plexus and the perivascular and perineural spaces of the central nervous system into the ventricles and subarachnoid space. This spinal fluid is drained through a lumbar puncture needle which is left in place for hours, days or even weeks. The passage of fluid through these spaces is increased by the use of a hypotonic salt solution given intravenously. The details of the method will be described later in this paper. The idea in view is to flush or wash out the toxins, exudates and other products of inflammation in the substance of the brain and spinal cord.

The belief that inflammatory products should be purged from the perivascular and perineural spaces of the central nervous system by this method has suggested the idea that such treatment might favorably influence the course of certain infections of the central nervous system.

By the process of osmosis, water and certain salts under normal conditions pass through the blood vessel walls into the interstitial spaces and from these interstitial spaces back into the capillaries. When there is a greater concentration of salt in the blood vessels the flow of fluid is from the interstitial spaces into the blood vessels; when the salt concentration is less in the blood stream the flow is from the capillaries into the fluid spaces surrounding the capillaries. Osmotic pressure is known as the force causing this interchange from the blood vessel into the surrounding tissues, and *vice versa*. It depends, of course, on the concentration of the salts in the solution. Normal osmotic pressure of the blood is that of an aqueous solution of 0.9 per cent of sodium chloride. A solution of greater concentration than normal is called a hypertonic solution; a solution of less than 0.9 per cent is called a hypotonic solution. It is a well accepted fact that the permeability of the blood vessel walls may vary in different organs of the body and also in the same organ under different pathological conditions. The permeability of the capaillary wall is believed to be increased where there is a surrounding area of acute inflammation of the tissue.

When a saline solution of less than 0.9 per cent —a hypotonic solution—is injected into the blood stream, osmotic pressure causes a flow of fluid through the blood vessel wall into the surrounding tissue and intercellular spaces. The fluid flows through the intercellular and perivascular spaces into the subarachnoid space and ventricles of the brain, and from the subarachnoid space the fluid is drained away from the body by means of a lumbar puncture needle. When the subarachnoid space is not continuously drained, it has been shown that there is some hydration of tissues in the central nervous system as a result of intravenous injections of hypotonic solution. If, however, the subarachnoid space is sufficiently drained, no hydration takes place, and there is, therefore, by this method, a flushing of the lymph spaces of the central nervous system.

We therefore conclude that, when a hypotonic salt soultion is slowly injected into the blood stream, osmotic pressure in the capillaries causes the fluid to flow from the blood stream into the perivascular spaces. If the fluid is continuously drained from the subarachnoid space, there is no opportunity for osmotic equilibrium to be established. The flushing by fluid from the capillaries of the depths of the inflamed area of the brain or cord can be continued as long as it seems desirable. There is evi-

*Read at the sixty-fourth annual session of the Medical Society of Virginia in Lynchburg, October 24-26, 1933.

dence, too, that the flow of fluid is greater in the inflamed areas, possibly in proportion to the inflammation.

It has been quite conclusively proven that the products of inflammation of the brain and cord are washed from the depths of the affected area and not simply from the surface of the brain and spinal cord alone. Investigators have found when treating animals with a certain type of brain and cord disease by means of this procedure, that the animals showed a very small percentage of lymphocytes in the first drops of spinal fluid collected, whereas after forced spinal drainage had taken place for some time only lymphocytes were found. It has been pointed out that with the application of this method of treatment the cellular picture of the cerebrospinal fluid usually shifted from a leucocytic to a predominantly lymphocytic one, and that forced spinal drainage probably increased the transfer of immune bodies from the blood to the spinal fluid.

The most effective method of making the blood hypotonic is by injecting a hypotonic solution of sodium chloride into the blood stream, 0.45 per cent solution being generally used. The solution must be injected slowly, not faster than one liter in an hour. Intravenous injection of the solution is essential, but plain water taken in large quantities by mouth or rectum is a further aid. The method of procedure consists in continuously draining spinal fluid from the subarachnoid space and from the ventricles through a lumbar puncture needle, which is allowed to remain in place for the desired period of the drainage. To facilitate drainage, after a spinal puncture is done, the patient is sometimes put on a Bradford frame, with a window cut at the lumbar region so as to allow the fluid to drain from the needle into a container. Some operators have used a needle with a flat phlange which fits against the skin of the back and which is held in place by adhesive tape, thus allowing the patient to lie on the side or the back at will. However, in this way, the fluid must drain into absorbent pads and all of the fluid cannot be collected.

For the reason that the intravenous injection of a hypotonic sodium chloride solution will immediately raise intracranial pressure, it is important to do an initial spinal drainage before the introduction of the solution into the vein is begun. The salt solution is administered in large volumes, ranging from one to three liters during the course of several hours. The duration of the drainage varies from a few hours to several days. At times, it is continued for a longer period. The frequency of repetition is rarely more than once a week, with a short number of repeated drainages. Treatment may be maintained for as long as two or three weeks in the face of the more desperate and acute infectious processes. In one of our cases, suffering with bacillus pyocyaneous meningitis in which the method of continuous spinal fluid drainage was used, drainage was continued through a lumbar puncture needle for about three months, with only short periods, never longer than a day, in which drainage was not maintained.

A trial of this procedure is indicated, we fell, in the presence of any acute or chronic infection of the central nervous system. Its greatest usefulness is in the treatment of those diseases of the central nervous system characterized by perivascular round cell infiltration, of which encephalitis, poliomyelitis, meningitis and myelitis are typical examples. The procedure is an exceedingly safe one, provided the cases are properly selected and there are no contra-indications. It is not advised in any form of acute obstructive hydrocephalus for the reason that the pouring out of fluid through the choroid plexus would cause a dilatation of the ventricles and an exaggeration of the pre-existing condition. This treatment is contra-indicated when there has been a recent hemorrhage into the brain, or in the presence of a cystic tumor of the brain, and in certain conditions of acute myelitis in which the cord is so swollen as to cause a spinal block. In the latter condition, if a combined cisterna magna and lumbar puncture be done, there is less likelihood of trouble. Experimental evidence has shown that there is no material increase in the blood volume or in the venous pressure. There is, therefore, no undue strain put on the cardiovascular system. It is not advisable to use this method of treatment in the presence of marked cardio-renal deficiency, nor in the presence of acute inflammatory processes elsewhere in the body, unless these inflammatory processes be in the kidney or bladder. In inflammatory conditions there is an increased permeability of the capillary walls in such regions, and there occurs an outpouring of fluid at the point of inflammation. This method gives rise to some alarm in cases of severe bronchitis and

the like. Headache as a complication of forced spinal drainage is sometimes encountered early in the course of treatment. It can usually be stopped by putting the stilette back into the lumbar puncture needle for a short period of time, thus temporarily increasing intracranial pressure and thereby relieving the "pull" on the meninges, which as a rule causes the headache.

There is a decided difference between forced spinal drainage and continuous spinal drainage. In the latter, the needle is simply allowed to remain in the lumbar space for a period of hours, days or weeks, and the fluid is permitted to drip continuously. This method allows the drainage principally of that fluid which is in the subarachnoid space and in the intracranial cavities, whereas in forced spinal fluid drainage there is a washing out and a purging of the perivascular and perineural spaces, as well as a bathing, to some extent, of the cells themselves. There is a very definite exudate of lymphocytes into the subarachnoid spaces by this method of therapy.

The results obtained in our own cases, and in those reported in the literature, show that in some instances the ultimate outcome was most favorable. In others, the results were unfavorable, but in no cases so far reported, as far as I have been able to find in the literature, was there a failure to observe a profound symptomatic alteration in response to this treatment. There have been reported cases of chronic, progressive encephalitis of between six and seven years duration in which there was a certain amount of improvement. It would seem necessary, therefore, to assume that there is some form of tissue change which can cause a symptom to persist for many years without becoming permanently structuralized, and that this pathological condition responds, at least temporarily, to forced spinal drainage. This is true in any number of cases of disseminated sclerosis in which there has been reported prompt improvement in symptoms following this method of therapy. We have had no experience in treating the Parkinsonian syndrome by this method, but investigators have felt that certain of these cases were improved by it. Sydenham's chorea is a type of encephalitis, and the good results in these cases have been particularly striking. In certain cases improvement has been marked on the morning after treatment, and even more striking improvement has been noted on the second day. It has occasionally been necessary to repeat this treatment in cases of chorea. Various forms of meningitis have been treated by this method. Septic meningitis, if the infection has not been too firmly established, has frequently been materially improved and in certain cases has been cured by this method. Syphilitic meningitis and other forms of syphilitic infection of the central nervous system have been treated successfully in this manner. There are reports in the literature of encouraging results obtained in the treatment of poliomyelitis by forced spinal drainage, and also in certain clinically diagnosed but unproven cases of tuberculous meningitis.

CONCLUSIONS

1. Theoreticaly, forced spinal drainage is sound therapy.
2. The method is believed to be a safe one.
3. It may be combined with other types of treatment, and sera suited to an individual case may be used in conjunction with it.
4. It has been shown that it is both safe and rational to combine the forcing of fluids through the central nervous tissue with continuous or frequent drainage of the cerebro-spinal fluid in treatment of patients with any infectious disease of the central nervous system.
5. The real value and the limitations of this procedure can be established only by further clinical experience.

Professional Building.

DISCUSSION

DR. DAVID C. WILSON, University: This paper of Dr. Gayle's gives us for the first time a description of this new procedure which may be of some value in the treatment of central nervous system disease. Fremont Smith, nearly ten years ago, started forced drainage but he gave his fluids by mouth and injected pituitrin to prevent the fluid from passing through the kidneys, in this way increasing the fluid in the blood, causing the flow of the fluid into the spinal canal. This method is different in that the hypotonic saline in the vein seems to cause more fluid to flow through the central nervous system and opens up new passage ways. Kubie and Retan have investigated this method very thoroughly by experiments on dogs and have used it clinically. There are about seventy-five cases in the literature in which this method has been used and the results reported. Dr. Gayle has covered these in his paper. In our own experience we treated one case of brain abscess in the frontal lobe without very much success. We also treated one case of meningo-encephalitis in which there was a blockage of the subarachnoid space with increased intracranial pressure. Forced drainage decreased

the pressure and seemed to open up the space for drainage. This procedure offers a great deal of hope in meningitis and in encephalitis. There is very little discomfort especially if you start the fluid in soon after starting to drain off the spinal fluid. There seems to be very little danger to the procedure. Dr. Gayle has described a very interesting procedure which is rational in the treatment of central nervous system diseases. It is still in its beginnings but I believe it promises much.

DR. W. GAYLE CRUTCHFIELD, Richmond: During the past few years we have used continuous drainage in most of our cases of acute pyogenic meningitis. The results have been encouraging and we feel that it is the only means at our disposal for rendering the patient more comfortable and probably reducing the mortality.

There is a difference in the principle of this method and that of forced drainage. I believe that in the chronic infections of the nervous system, where there is little if any alteration in the chemistry of the spinal fluid, the method of choice would be that of using hypotonic solutions. In acute pyogenic meningitis, however, I believe there is an increase in the osmotic pressure of the cerebro-spinal fluid to a point where isotonic solutions in the blood relatively become hypotonic in their action. If this be true, then there should be no practical difference in the two methods for infections of this type.

There is one point I would like to stress and that is the marked improvement in the clinical picture following drainage. The patient is far more comfortable. Headache and vomiting are lessened. Convulsions usually cease and there is a decided lowering of the body temperature. After such an improvement has been brought about, the patient is more able to retain fluids and nourishment and therefore has a better chance to withstand the effects of the disease.

DR. F. D. WILSON, Norfolk: I should like to ask Dr. Gayle if he has had any experience with continuous spinal fluid drainage in chorea.

DR. FRANK REDWOOD, Norfolk: Not so many years ago, when we saw acute infections of the nervous system we did not do anything for them, because we did not know what to do. While my personal experience has been rather limited with this procedure, it seems to me it is a very valuable treatment and that it will save a good many cases.

DR. HOWARD R. MASTERS, Richmond: I enjoyed Dr. Gayle's paper and think it is a real contribution to this subject—certainly if we consider meningitis an infectious proposition, such as it is. In the serous types, where the pathways of the spinal fluid are more or less blocked, if we can keep the pathways washed out and clean after we reduce the pus, I think we can expect much better results from this type of treatment.

I believe I understood Dr. Gayle to say that cases of disseminated sclerosis improve on forced drainage. General experience shows that lumbar puncture, in disseminated sclerosis, frequently aggravates the condition. Personally, I have seen cases who were improving from their symptoms made worse by a test puncture at which four or five c.c. was withdrawn. I should like to hear him express himself on that.

DR. GAYLE, closing the discussion: In answer to Dr. Wilson's question concerning the treatment of chorea by forced spinal drainage, I would say that we have treated only one case of chorea by this type of therapy. There was, too, in this case, some question as to the diagnosis. After giving her about 2,000 c.c. of hypotonic salt solution by vein and draining her subarachnoid space for six or eight hours, she had very considerable relief from choreiform movements and was better for a time. We also treated one case of disseminated sclerosis that had a very prompt remission following forced spinal drainage, but whether this remission would have occurred without treatment, I do not know. It is interesting to note, however, that other observers have treated a larger series of disseminated sclerosis by this method, and have reported gratifying results.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

Our Pioneer Heroine of Surgery—Mrs. Jane Todd Crawford.*

Jane Todd Crawford was born in Rockbridge County, Virginia, in 1763. She was the second of six children. She had the usual educational advantages of her day. As a girl she declared she would learn to cook and keep house, to spin and to weave and marry a farmer. It is said that she was a good cook and housekeeper and, when she was thirty-one years of age, she married Thomas Crawford, a farmer. They remained in Virginia eleven (11) years, when they moved to Green County, Kentucky. This trip was made on horseback.

Mrs. Crawford was the mother of five children. Four (4) years after they moved to Kentucky, when 46, Mrs. Crawford was afflicted by a peculiar and

*Material for this article abstracted from paper given by Mrs. Arthur Thomas McCormack before the Filson Club in 1932.

painful ailment. Local physicians were powerless and puzzled. They called in consultation, Dr. Ephraim McDowell, an unusually successful practitioner, from Danville, Kentucky, sixty miles distant.

On examination, he recognized that she did not require the delivery of twins, as was supposed, but had a foreign growth in her abdomen. Dr. McDowell explained the condition to Mrs. Crawford, told her that relief might be obtained from an operation; but that it would only be an experiment, as the operation had not been attempted, so far as he knew.

Mrs. Crawford agreed to the experiment. The trip was made over the mountains on horseback. This was in 1809, before the discovery of anaesthesia, and our heroine repeated psalms, while a 22½ lb. tumor was removed from her abdomen.

Dr. McDowell writes that, in five days after operation, he found her making her own bed—and she made the trip home in twenty-one days. The following year the Crawfords moved to Indiana, where for thirty-two years, Mrs. Crawford led a useful and active life.

Kentucky has honored Mrs. Crawford by naming the road which she traveled from Greensburg to Danville, "The Jane Todd Crawford Trail."

There should be other memorials to honor this woman.

The operation has resulted in relief, both physically and mentally, to womankind everywhere; Virginia was the birthplace of both Dr. McDowell and Mrs. Crawford; the operation was performed in Kentucky; Mrs. Crawford lived the last 30 years of her life in Indiana and is buried there; so it seems that the nation should have an opportunity to pay tribute to her.

The Auxiliary to the Lynchburg Academy of Medicine.

Eighteen ladies met in Lynchburg, in March, and organized this Auxiliary with Mrs. F. O. Plunkett of that city as president. No definite plans were made at that time but at the meeting early in May, it was decided to have a benefit bridge party at the Virginian Hotel, to raise money for any charitable purpose which might appeal to the members. The benefit party, held later in May, was quite a success and the Auxiliary was thus enabled to help the milk fund in the public schools. The next meeting will be held in the Fall.

Public Health Statistics

WARREN F. DRAPER, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during May, 1934. showed the following cases: Typhoid and Paratyphoid Fever, 30; Diphtheria, 41; Scarlet Fever, 101; Measles, 5,061; Meningitis, 7; Poliomyelitis, 0; Typhus Fever, 2; Rocky Mountain Spotted Fever, 5.

Typhoid and Paratyphoid Fever was reported from the following counties: Alleghany, 1; Augusta, 1; Campbell, 1; Frederick, 1; Greenesville, 1; Madison, 1; Pittsylvania, 2; Prince William, 1; Rappahannock, 2; Scott, 2; Shenandoah, 1; Smyth, 1; Southampton, 1; Tazewell, 3; Washington, 1; Wise, 1; Danville City, 1; Newport News City, 3; Norfolk City, 1; Petersburg City, 2; Richmond City, 2.

Epidemic Meningitis was reported from: Pulaski, 1; Russell, 1; Warren, 1; Lynchburg City, 1; Norfolk City, 2; Richmond City, 1.

Rocky Mountain Spotted Fever was reported from the following counties: Dickenson, 1; Madison, 1; Wise, 1; Richmond County, 2 (refered to in June issue).

The two cases of Typhus Fever were reported from Prince William County and Hanover County.

The number of cases of diphtheria has decreased from sixty-four cases in April to forty-one cases in May. They were scattered in twenty counties and five cities.

Scarlet Fever cases were reported from thirty-five counties and seven cities.

The cases of measles were scattered in eighty-nine counties and ten cities.

POLIOMYELITIS: A news letter was issued May 29, 1934, to all State Health Officers by the United States Public Health Service regarding an outbreak of poliomyelitis in Los Angeles County, California. Cases reported to that date were as follows:

	Cases
Los Angeles City:	
Week ended May 4, 1934	2
May 11, 1934	7
May 18, 1934	9
May 25, 1934	51
Los Angeles County (outside city):	
Week ended May 5, 1934	5
May 12, 1934	15

Up to May 29th no unusual prevalence of poliomyelitis had been reported to the United States Pub-

lic Health Service this year from other parts of California, or from any other States. In 1925, 1927 and 1930, which were years of high incidence of poliomyelitis in Los Angeles, the increased prevalence began somewhat later and reached the peak in July. The previous maximum number of cases in one week was forty-nine cases for the first week of July, 1930.

In Virginia thirty-nine cases occurred in the year 1933—seven cases occurred in August, ten in September and nine in October. Nine cases have occurred in Virginia thus far this year—three in January, two in February and four in March.

A very excellent pamphlet (fifty-five pages) is obtainable from the American Medical Association, Chicago, Illinois. This pamphlet was prepared by a special committee on poliomyelitis in connection with the American Medical Association's exhibit on poliomyelitis at Milwaukee in 1933. The pamphlet contains practical suggestions on the most recent aspects of diagnosis and treatment. Copies may be seen in the Library of the State Department of Health, Room 719, State Office Building, Richmond, Virginia.

Convalescent serum is available at cost at the State Department of Health.

Truth About Medicine

In addition to the articles enumerated previously, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Cheplin Biological Laboratories, Inc.
- Ampule Solution Procaine Hydrochloride 2 per cent, 1 c.c.
- Ampule Solution Procaine and Epinephrine, 3 c.c.
- Ampules Bismuth Subsalicylate 2 grains (0.13 Gm.) in Oil, 1 c.c.
- Ampules Solution Mercury Succinimide 1/6 Grain (0.01 Gm.), 1 c.c.

Lederle Laboratories
- Refined Diphtheria Toxoid (Alum Precipitated)

Schering & Glatz, Inc.
- Urotropin
  - Drotropin Tablits, 5 grains (0.3 Gm.)
  - Urotropin Tablets, 7½ grains (0.5 Gm.)

Ucoline Products Company
- Ucoline Calcium Phosphate Cocoa Wafers.

Book Announcements

Nervous Breakdown: Its Cause and Cure. By W. BERAN WOLFE, M. D., Director of the Community Church Mental Hygiene Clinic. New York. Farrar and Rinehart, Inc., New York. 1933. Octavo of 240-xv pages. Cloth. Price, $2.50.

Once, twice, three times have I read Nervous Breakdown; its cause and cure, by Dr. W. Beran Wolfe. I wish I had written it; yea, more, I wish I could have written it.

The purpose of the volume of two hundred and forty pages is to help the nervous person to an understanding of himself or of herself. I assume that the author uses nervous breakdown as a synonym for mental or emotional maladjustment. He makes it plain that material nerves and so-called nervousness have little to do with each other. The nervous person may be physically fit, but otherwise helplessly unfit.

Dr. Wolfe thinks of the universe as occupied by two things—the individual and everything else. If the individual does not live life trippingly he or she must be out of tune either with self or with some of the things in that self's particular universe. There are no accidents in the world of the individual. People do not accidentally become nervous, nor do they snap out of a nervous upheaval. In this domain causes are at work and consequences are inevitable. But the causes are often hidden and unknown, and in consequence the resulting nervousness seems to be a senseless visitation of a mysterious affliction.

No other mortal is quite so subjective in thought as the neurotic. All of such an individual's worthwhile world is within. Without help such an individual is both unable and unwilling to make the condition objective. Because it is not easy to look one's own nervous self full in the face. The nervous person's energy—mental and physical—is engaged in hiding self from self. The neurotic is always engaged in a foot-race with himself—in attempting to run away from himself; or in dressing his neurotic self up in haberdashery that will be unobjectionable to himself. Now, Dr. Wolfe introduces the nervous patient to himself. Prior to such introduction the two, though intimate companions,

are strangers. After they become thoroughly acquainted the well person discovers that he is no longer in need of his nervous devices, and they disappear. Every nervous person is at least two, if not more, individuals. For such a person to get well means for that person to get back to being one person.

We are all much more alike than unlike. When we read about nervousness in others we are becoming better acquainted with ourselves.

Each of the seven chapters is as entertaining as Dr. Jekyll and Mr. Hyde for the names of both those citizens occupy many columns in every telephone directory. The first two or three chapters deal with causes; succeeding chapters with manifestations. The best plan is to read them all, from start to finish, once, twice—assimilation is a slow process. In exchange for 2.50 Messrs. Farrar and Rinehart will give up a copy of it. The buyer gets the better end of the bargain. I wish I had not read it—so that I might read it for the first time. The only interesting people are nervous people.

J. K. HALL.

Nauchnaya Leteratura CCCP. 1928. Meditsena. Moskva. 1931. (The scientific literature of the USSR for 1928. Medicine. Moscow.)

Russian scientists are seriously shut in and isolated from the rest of the world because so few people know their language. The result is that their work is largely ignored.

This publication is an attempt to gather together and present the scientific works published in Russia during 1928. This particular volume covers medicine only and yet it is a stately book 7x10½ inches in size and contains 837 pages of fine print. It gives the name of the author, the title of the book or article and a very short abstract. There are 11,012 such books or articles listed and these do not include the numerous articles published by Russians in German, French and English periodicals. There is a list of 231 Russian medical periodicals in which these articles appeared.

When one looks at this large book filled with their works and recalls the tremendous advances that have been made in Russian medicine during the last six years, one wonders what they may not be doing today.

The titles of their articles sound very familiar and show that their problems are very similar to our own. For example:

Acute poisoning with wood alcohol; Ionization of the air in Kislovodsk; The permanent results of sanitarium treatment of pulmonary tuberculosis: Post-operative care; The operating room as a possible source of infection; The incidence of trichinosis in White Russia; A colorimetric method for detecting ergot in flour; Dentistry in America; Actinomycosis of the bladder; Plastic restoration of the urethra; Hypnotic analgesia in labor; A case of simultaneous intra- and extra-uterine pregnancy; The pyrogenic treatment of syphilitic meningitis; Experimental studies of intra-ocular pressure.

There is an author index of 30 pages (about 8,000 names) and a subject index of 46 pages.

E. C. L. MILLER.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1933. Cloth. Price, Postpaid, $1.00. Pp. 188. Chicago: American Medical Association.

The main bulk of the volume, which is, incidentally, considerably increased over that of recent annual volumes, is taken up with reports on products which the Council has found unacceptable for inclusion in New and Nonofficial Remedies.

A feature of marked current interest in this volume is the preliminary report on Alpha-Dinitrophenol, the new drug for acceleration of cellular metabolism. The Council voices a warning on the dangers attending the use of this drug; this warning has been increasingly justified in reports of fatalities since the appearance of the Council's report in July of last year. There are a number of other preliminary reports which make this volume most interesting. Of interest also is the Council's second report on the intravenous use of barbital compounds which is the result of a questionnaire sent to representative physicians. In view of the answers to the questionnaire, the Council reaffirmed its previous decision concerning the limitations of intravenous use of barbital compounds; namely, that these preparations should be administered intravenously only in a limited number of conditions in which administration by other routes is not feasible. The report carefully details these conditions.

Hospital Service in the United States. 1934. Thirteenth Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the American Medical Association. The 1933 Census of Hospitals. Hospitals Registered by the American Medical Association. Reprinted from the Hospital Number of the Journal of the American Medical Association, March 31, 1934. Pamphlet. Price, 50 cents.

Virginia Medical Monthly

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Editorial

Take Thought for the Morrow.

At its last meeting the Medical Society of Virginia "resolved that the Public Relations Committee of the Medical Society of Virginia disapproves of the plan proposed by the State and Federal Emergency Relief organizations for the compensation of physicians on a fee schedule basis for the care of the indigent sick. . . ." Seven months later Administrator William A. Smith advised the medical profession of Virginia that "the Virginia Emergency Relief Administration has adopted a schedule of modified fees for medical service which will become operative at once throughout the state. . . ." Had the opinion of many thoughtful members of the society been regarded we would not be subjected to the chagrin of seeing a resolution of the Medical Society of Virginia set at naught. The majority of Virginia physicians are probably agreed that it was a mistake to have passed such a resolution.

It must be clear to most of us that the medical profession of Virginia will have to face many economic problems in the future entirely new to them and some apparently at variance with the traditional point of view. It is inconceivable that the economic revolution in the midst of which we find ourselves should continue to leave the skirts of medicine entirely untouched. We cannot live and practise medicine out of joint with the times. We must be prepared for changes. We must initiate those changes. We cannot successfully oppose the Federal government in its interpretation of what it considers the best public policy or when it acts according to its lights in the interests of the common weal. We must go along with it. Why wait for coercion? It is better to lead than be led.

Thymic Hormones.

The controversy is an old one. Is the thymus a lymphatic or an epithelial structure? Does it play a part in blood formation? Is it concerned with growth? The interrogation seems to have been lifted from at least one of these questions by the recent work of Dr. Leonard G. Rowntree, Director of the Philadelphia Institute of Medical Research. Working with rats, he appears to have shown that when properly prepared extracts of the thymus are injected into succeeding generations of rats, extraordinary accelerations of growth and sexual precocity are to be observed. Under the influence of Rowntree's extracts, rats who would normally have procreated between the ages of fifty and seventy days acquired this physiological function as early as the twenty-ninth day. Their accelerated growth was equally dramatic. By the third generation rats who had been subjected to thymus inoculations weighed one-third more at birth than the average new-born rat, and teeth, hearing and sight developed much more rapidly than was normal. From these experiments we infer that another function of the thymus may be the speeding up of certain vital processes. It is conceivable that deprived of natural inhibiting factors such as exist probably in the other endo-

crine glands the thymus would thrust adulthood upon us much sooner than is now the case. In the search for longer days, therefore, man may simply have to find some safe and workable method for retarding thymic activity.

An Article Worth Reading.

Those who missed the important article *Standard Treatment Procedure in Early Syphilis* by John H. Stokes and his collaborators in the April 21st issue of the *Journal of the American Medical Association* should make it their business to read this report without delay. It is based on a "genuinely massive investigation of world-wide scope," and has about it the aura of authority. The gist of the report may be given in the author's own words: "The modern system for the treatment of early syphilis must be continued; it must call for not less than twenty, and, unless special resistiveness is encountered, hardly more than thirty injections of the arsphenamine; and in accordance with the principles generally recognized in the treatment of the disease, the system should call for continued treatment with heavy metal for one year after all symptoms and signs of the disease have disappeared. In order to determine this end point, blood tests should be taken at least at the beginning and end of each arsphenamine course and the patient should be warned of the lack of significance of the negative report from the standpoint of the schedule."

There are no doubt many physicians who would welcome an equally authoritative statement of a standard therapeutic procedure in late syphilis. For instance, what is to be recommended to the many Wassermann-positive-symptom-free persons whom the internist discovers annually in the course of systematic physical examinations?

Local Anaesthesia.

This year marks the fiftieth anniversary of the discovery of local anaesthesia. The American Association of the History of Medicine at its meeting in Cleveland the other day paid tribute to Sigmund Freud and Karl Koller through whose imaginations and experiments the anaesthetizing properties of cocaine were demonstrated in 1884. "The divine plant of the Incas" had been known to the natives of Peru in South America from the earliest times and its medicinal properties appreciated. The active principle was isolated by Gardeka in 1855 and called erythroxyline, and by Albert Niemann in 1858 and called cocaine. Anrep, Collin and Fauvel had studied the physiological value of cocaine before 1884. Hard upon the epoch making discoveries of Freud and Koller the practical application of cocaine was begun in earnest. Within the same year Anton Wölfler in Germany and Howard Kelly in this country were using it. In 1885 William S. Halsted employed cocaine in general surgery and James L. Corning, of New York, used it as a spinal anaesthetic. Infiltration anaesthesia was introduced by Carl Schleich in 1894 and conductive anaesthesia by George Crile in 1897. Eucaine was introduced by Merling in 1896 and novocaine by Alfred Einhorn in 1905.

Virginia Flora.

At this time when sufferers from hay fever are hopefully appealing to the allergist and the allergist is busily desensitizing those who have put their trust in him, the need for an accurate and thorough-going botanical survey of Virginia and vicinity is again brought home. There is available, it is true, P. R. Merriman's *Flora of Richmond and Vicinity,* as well as the *Flora of the District of Columbia and Vicinity,* but we should have more complete knowledge of all the flora of our State—trees, grasses and weeds, with their pollination seasons. What has been accomplished in Kansas should be done in Virginia.

Preserving History.

A few days ago on a commanding hillside overlooking the James River, the city of Richmond and the country beyond, a bronze tablet embedded in a granite boulder was unveiled by the Daughters of the Confederacy. The spot marks the place where the Chimborazo Hospital stood during the Civil War. This was the largest hospital in the world up to that time, a cantonment built much after the order of our World War hospital structures, consisting of one hundred well ventilated wooden buildings, one hundred feet long by thirty feet wide, separated by alleys and streets and organized into five divisions of thirty wards each. Here under the command of Surgeon James B. McCaw and a corps of fifty-odd assistant surgeons and forty-five matrons, 77,000 soldiers were cared for during the course of the war. The elaborate structure was well supplied with water, ice-houses and an excellent system of sewage disposal. A bakery, a brewery, soup houses, a nearby farm called "Tree Hill" and a trading boat on the James River and Kanawha Canal were important accessories.

What the Daughters of the Confederacy have done for the Chimborazo Hospital and what the Medical Society of Virginia has done in the past—notably in making a shrine of the birthplace of Walter Reed and of marking the last resting place of John Peter Mettauer—the Society can do again. It should annually mark some spot in the State of medico-historic importance. It has made a start in preserving the rich heritage of the Virginia profession but much work remains. It should have a historical committee constantly functioning. Its archives should contain brief but accurate biographical sketches of all members. It should preserve in permanent form all writings of members, for by the systematic collection and preservation of current historical material the task of some future historian of medicine in Virginia will be lightened. Members who are historically minded should set up medical history societies in the larger centers. The Richmond Academy of Medicine has recently organized a section on the History of Medicine, the by-laws providing for non-resident membership, and this section would welcome to its ranks members of the profession from anywhere in the state.

President's Message

An Explanation.

Since the development of the Federal Relief Administration and the effort that has been made to establish a State-wide fee system, it may be wise to state the position taken by most of the officials of the State Society. Those members of the Society, who were present as members of the House of Delegates, at Lynchburg, last October, will recall the resolution presented by Dr. Alex. F. Robertson, Jr., of Staunton, at that time Chairman of the Committee on Public Relations. This resolution, which was passed by a large majority, stated that the Medical Society of Virginia would not adopt a fixed fee for FERA work but left it to each local society or community to make such arrangements as the local physicians thought wise, with local administrators or whoever should be in charge of such work. Any one not familiar with this resolution, may find the entire act as adopted and its discussion on pages 563-4 of the December, 1933, issue of the VIRGINIA MEDICAL MONTHLY. This resolution was presented and adopted by the House of Delegates in anticipation of this very emergency and is the will of the Society relative to this phase of the Emergency Relief Work. However there is nothing whatsoever in this resolution, which prevents any local society making any arrangement it may deem fit about this matter.

One large and influential component Society and several influential doctors, who are members of the State Society, have asked the President to call a meeting of the Council, which is the ad interim body, which may act in emergencies between the meetings of the State Society. After hearing from the majority of the Councilors, however, it has been ascertained that most of them are opposed to any meeting for considering this matter and they believe that the resolution adopted at Lynchburg should be the policy of the State Organization; furthermore, it is the very decided opinion of the President that the Council has no jurisdiction in this matter to revoke or supersede a resolution passed by the House of Delegates, so it has been decided not to call a meeting of the Council for the purpose of attempting to fix a State-wide fee for this Emergency Relief Work.

It may be stated here, that the President of the State Society was made a member of the State Advisory Board (Medical) and named as the chairman of that body, without his consent and without notice until he was apprised of the fact by rather remonstrating letters from several parties. The President of this Society has attended no meetings of this Advisory Board and is in no way connected with that body. Of course he appreciates the honor of being associated with this group of distinguished physicians, who are members of this Board but deemed it unwise to accept the invitation on account of the position taken by the State Society, as well as his own personal convictions on the subject. Nevertheless, had not the majority of the Council been opposed, the meeting of that body would have been called.

R. D. BATES, M. D., *President.*
Medical Society of Virginia.

Department of Clinical Education of the Medical Society of Virginia

Tenth Circuit of Courses in Pre-natal and Post-natal Care.

Beginning the week of July 9th the tenth series of five post-graduate courses in pre-natal and post-natal care conducted by Dr. M. E. Lapham, of Philadelphia, Field Clinician of the Joint Committee on Pre-natal and Post-natal Instruction, will begin in northeastern Virginia, the only section of the State yet unserved in a program of more than two years' duration.

By approval of the medical societies concerned and the effective assistance of interested individuals three of the study groups have been definitely organized for Alexandria, Fairfax and Fredericksburg. Through Dr. H. A. Latane and Dr. A. L. Carson, Jr., advance enrollments previously reported have been obtained from eight members in the Alexandria group and from nine members in the Fairfax group. Through Dr. Thomas B. Payne five advance enrollments have been secured for the Fredericksburg group, those of Drs. J. E. Cole, G. B. Harrison, T. B. Payne, E. R. Ware, and J. E. Shields.

Preliminary inquiry has disclosed sufficient interest among the physicians of Culpeper County to warrant anticipation of the formation of a group there. The Northern Neck Medical Society, which endorsed the organization of a class for its members almost at the beginning of the program of 1932, may succeed in enrolling a group of sufficient size for a course in Warsaw. Other societies are to vote upon the courses at later meetings and other applications to make the circuit a very full one are possible.

This tenth circuit of Dr. Lapham's classes is the last that is now being planned for him in Virginia. Every medical society in the State with enough members to form a class has been offered his services; every society but one that has acted has approved the work and only three remain to vote upon establishment or rejection of the courses.

Returns from the Ninth Circuit.

Such tangible measures of success as may be applied to any educational process seem as favorable for the ninth circuit as for those preceding. The rate of attendance of members was as usual over 75 per cent. Every member who has replied to the Joint Committee's request for comment on the courses has expressed his satisfaction with the return on his investment of time and money; and all but one, who was neutral, have written that they would like to have the opportunity of further study in other fields.

GEORGE W. EUTSLER,
Executive Secretary, Department of Clinical Education,
Secretary, Joint Committee.

Proceedings of Societies

The Fredericksburg Medical Society

Held a most interesting meeting on May 29th, in Fredericksburg, Va., at which time they had as their guests the members of the Piedmont Medical Society, the Loudoun County, Fauquier County, and Northern Neck Medical Societies, the officers stationed at Quantico, Va., Dahlgren, Va., and the officers of the C. C. C. Camps at Bloody Angle, Wilderness and Chancellorsville.

The scientific program consisted of the following papers which were very interesting and were freely discussed: The Acute Abdomen by Dr. J. M. T. Finney, and Fungi Infections of the Tongue, by Dr. Thos. R. Boggs, both of Johns Hopkins Hospital, Baltimore; Phallic Worship by Dr. F. R. Hagner, Washington, D. C.; and Sterilization of the Feebleminded by Dr. J. S. DeJarnette, Staunton, Va.

Dr. W. A. Harris, Spotsylvania, is president, and Dr. E. R. Ware, Fredericksburg, secretary of the Society.

Norfolk County Medical Society.

At the annual meeting of this Society held on June 4th, the following officers were elected for the ensuing year: President, Dr. C. Carroll Smith; vice-president, Dr. James W. Hunter; and secretary-treasurer, Dr. Lockburn B. Scott, who was re-elected for the sixteenth consecutive year. All officers are of Norfolk. Delegates and alternates to the State Society were also named.

Dr. H. R. Drewry was elected to Honorary Membership in recognition of his long and useful membership in the Society. The following are recent additions to membership: Drs. Allen S. Lloyd, P. B. Stokes, and C. M. McCoy, all of Norfolk.

Roanoke Academy of Medicine.

At the regular meeting of this society on May 7th, the following program was presented: Purulent Pericarditis, with case report by Dr. Hal Davis; Afebrile Empyema, with case report by Dr. H. R. Hartwell; Serum Treatment of Tularemia, by Dr. S. F. Driver; and Some Urological Problems of Childhood, by Dr. J. A. C. Colston, of Johns Hopkins Hospital.

The last hospital meeting of the year was held at the Jefferson Hospital on May 21st, at which time the following papers were presented: Value of Roentgen Ray in Pregnancy, by Dr. C. H. Peterson; Treatment of Perforated "Peptic" Ulcer, by Dr. Hugh H. Trout; Arachnidism, by Dr. A. W. Smith; Urinary Suppression, by Drs. W. W. S. Butler, Jr., and George B. Lawson; Spinal Fluid Drainage, by Dr. O. D. Boyce; and case reports by Drs. George B. Lawson and Roger DuBose.

Delegates and alternates to the State Society meeting were elected at this time.

It was decided that the Academy should hold its annual picnic in June, but there should be no further scientific meetings until September.

The Lynchburg Academy of Medicine

Held its regular monthly meeting on June 4th. Dr. T. P. Sprunt, of Johns Hopkins Hospital, Baltimore, presented a comprehensive and instructive paper on the "Treatment of Common Types of Chronic Arthritis."

Delegates and alternates to the State Society meeting were named at this time. A motion was passed reducing the annual dues to one-half, for those members living more than ten miles from the city limits. A resolution was also passed agreeing to the scale of fees suggested by the Medical Advisory Board of the F. E. R. A. for those cases on the Federal Relief rolls.

The Medical Association of the Valley of Virginia

Held its Spring meeting on May 31st at Rockingham Memorial Hospital, Harrisonburg, Va. Dr. E. C. Stuart, of Winchester, presided and delivered his presidential address. Dr. H. B. Mulholland, University, Va., was the invited guest, and the following members also presented papers: Dr. H. Grant Preston, Harrisonburg; Dr. T. F. Kennan, Raphine; Dr. Ellsworth Johnson, Winchester; and Dr. G. S. Hartley, Clifton Forge. Dr. Alex. F. Robertson, Jr., Staunton, is secretary, and Dr. L. F. Hansbrough, Front Royal, treasurer.

News Notes

Commencement Exercises of Virginia's Medical Schools.

MEDICAL COLLEGE OF VIRGINIA

The 1934 commencement exercises of the college started on May the 26th with Stunt Night followed by a dance at Jefferson Hotel. The following day, the baccalaureate sermon to the graduates was given by Rev. Churchill J. Gibson, D. D., at St. James Episcopal Church.

The alumni held sway on Monday, the 28th, with the annual meeting, golf tournament played by the faculty *versus* the alumni, and the alumni dinner that evening. Dr. Clifton M. Miller, Richmond, was elected president of the Alumni Association for the coming year, with Dr. Elisha Barksdale, of Lynchburg, as first vice-president.

On Tuesday, a buffet luncheon was given for the Board of Visitors, Faculty, Alumni and Senior

Classes at Cabaniss Hall. The final exercises were at 8:00 P. M. that evening, at Mosque Theatre, with Dr. Francis Pendleton Gaines, President of Washington and Lee University, as speaker. On this occasion, dipolmas were awarded to ninety-three graduates in medicine, twenty-six in dentistry, twenty-five in pharmacy, and thirty-nine in nursing. The annual reception and dance which followed at Jefferson Hotel brought to a close the ninety-sixth session of the college.

The following are graduates in medicine, with hospital appointments:

MEMORIAL HOSPITAL, RICHMOND—Drs. William Fielding Bryce, Jr., Richmond; Frank Woodson Jones, Oak Hill, W. Va.; William Samuel Lloyd, Bumpass; John Robert Massie, Jr., Perkinsville; Emmett Carlysle Matthews, Richmond; Pietro Nicolino Pastore, Bluefield, W. Va.; William Ribble Pretlow, Chester; Chester Loris Riley, Martinsburg, W. Va.; Clyde Arthur Smith, Rainelle, W. Va.; and Girard Vaden Thompson, Chatham.

THE TUCKER SANATORIUM, RICHMOND—Dr. Robert Syer Barrett, Smithfield.

JOHNSTON-WILLIS HOSPITAL, RICHMOND—Drs. Robley Dunglison Bates, Jr., Newtown; Robert DeVane Croom, Jr., Maxton, N. C.; and Hudson Mason Wingfield, Ashland.

STUART CIRCLE HOSPITAL, RICHMOND — Drs. Clarence Conway Chewning, Jr., Chilesburg; Thomas Bryant Pope, Drewryville; and Robert Vaughan Terrell, Richmond.

SHELTERING ARMS HOSPITAL, RICHMOND—Drs. James Dean Cregar, Pulaski; and Jamie Pleasant Scott, Stone Mountain.

ST. ELIZABETH'S HOSPITAL, RICHMOND — Dr. Franklin Heywood Goodwin, Clifton Forge.

ST. LUKE'S HOSPITAL, RICHMOND—Drs. George Louis Jones, Ridgeway; and Robert Sterling Montgomery, South Hill.

RETREAT FOR THE SICK HOSPITAL, RICHMOND—Drs. Richard Campbell Manson, Richmond; Kermit Jackson Moore, Cambria; and John William Whitlock, Charleston, W. Va.

GRACE HOSPITAL, RICHMOND—Dr. Reynolds Clinton Siersema, New York, N. Y.

PROTESTANT HOSPITAL, NORFOLK—Drs. Brock Darden Jones, Jr., Holland; and Fred Grant Pegg, Guilford College, N. C.

ROANOKE GENERAL HOSPITAL, ROANOKE—Dr. James Paul Kent, Wirtz.

GEORGE BEN JOHNSTON MEMORIAL HOSPITAL, ABINGDON—Dr. Vincent Edward Lascara, Norfolk.

LEWIS-GALE HOSPITAL, ROANOKE—Drs. Luther Burton Lowe, Roanoke; and John Harris Smith, Copper Hill.

CHESAPEAKE AND OHIO HOSPITAL, CLIFTON FORGE—Dr. Horace Dunbar Hoskins, Saluda.

ST. VINCENT'S HOSPITAL, NORFOLK—Drs. Arthur Seldon Mann, Jr., Elizabeth City, N. C.; and Irwin Matthew Nuckols, Richmond.

LYNCHBURG HOSPITAL, LYNCHBURG—Dr. Sam Silver, Richmond.

BUXTON HOSPITAL, NEWPORT NEWS—Drs. Ralph Judson Sykes, Jackson, N. C.; and Frederick Nimrod Thompson, Richmond.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL, WASHINGTON, D. C.—Dr. Alfred Abramson, Alexandria.

SIBLEY MEMORIAL HOSPITAL, WASHINGTON, D. C.—Dr. Alan Frank Kreglow, Martinsburg, W. Va.

GALLINGER MUNICIPAL HOSPITAL, WASHINGTON, D. C.—Dr. Clyde Garvice O'Brien, Appomattox.

WHEELING HOSPITAL, WHEELING, W. VA.—Dr. Edgar Charles Blum, Elm Grove, W. Va.

OHIO VALLEY GENERAL HOSPITAL, WHEELING, W. VA.—Dr. Harry Anthony Smith, Wheeling, W. Va.

BLUEFIELD SANATORIUM, BLUEFIED, W. VA.—Dr. Clarence Ivanhoe Butte, Jr., Matoaka, W. Va.

ST. MARY'S HOSPITAL, HUNTINGTON, W. VA.—Dr. Charles Fallon Davis, Jr., Roanoke.

CHESAPEAKE AND OHIO HOSPITAL, HUNTINGTON, W. VA.—Dr. Leonard Esker Neal, Huntington, W. Va.

HUNTINGTON MEMORIAL HOSPITAL, HUNTINGTON, W. VA.—Dr. Anna Theresa Swing, Rainelle, W. Va.

PITTMAN HOSPITAL, FAYETTEVILLE, N. C.—Dr. Samuel Clements Cox, Richmond.

CITY MEMORIAL HOSPITAL, WINSTON-SALEM, N. C.—Drs. Harvey Allen Eldridge, Dunn, N. C.; and George Howard Quillen, Roda.

DAVIS HOSPITAL, STATESVILLE, N. C.—Dr. Benjamin Hackett Harding, Yadkinville, N. C.

JAMES WALKER MEMORIAL HOSPITAL, WILMINGTON, N. C.—Dr. Frank Trumbo Harper, Jr., Kinston, N. C.

HIGHSMITH HOSPITAL, FAYETTEVILLE, N. C.—Dr. John McKamie Harry, Harrisburg, N. C.

ERLANGER HOSPITAL, CHATTANOOGA, TENN.—Dr. Henry Allen Brown, Charleston, W. Va.

UNIONTOWN GENERAL HOSPITAL, UNIONTOWN, PA.—Dr. John Morrison Brown, Summersville, W. Va.

MONTGOMERY HOSPITAL, NORRISTOWN, PA.—Dr. Mildred Brynberg Forman, Elsmere, Del.

UNIVERSITY OF PENNSYLVANIA HOSPITAL, PHILADELPHIA, PA.—Dr. James Harrison Gordon, Richmond.

ST. VINCENT'S HOSPITAL, ERIE, PA.—Dr. Cecil Curtis Hatfield, Saltville.

ST. MARY'S HOSPITAL, PHILADELPHIA, PA.—Dr. Nathaniel Thomas Keys, Philadelphia, Pa.

ST. JOSEPH'S HOSPITAL, READING, PA.—Dr. Ralph Mitchell Mulligan, Uniontown, Pa.

HAMOT HOSPITAL, ERIE, PA.—Dr. Edwin James, Palmer, Richmond.

ST. VINCENT'S HOSPITAL, NEW YORK, N. Y.—Dr. Thomas Henry Deely, East Rockaway, L. I., N. Y.

MORRISANIA CITY HOSPITAL, NEW YORK, N. Y.—Dr. Milford Martin Greenbaum, New York, N. Y.

METROPOLITAN HOSPITAL, NEW YORK, N. Y.—Drs. Jerome Joseph Shapiro, Richmond; and Sol Charles Werblow, Newport News.

NEW YORK POLYCLINIC HOSPITAL, NEW YORK, N. Y.—Dr. Malcolm Greer Stutz, Southern Pines, N. C.

GREENVILLE CITY GENERAL HOSPITAL, GREENVILLE, S. C.—Dr. Robert Andrew Brown, Jr., Greenville, S. C.

WILMINGTON GENERAL HOSPITAL, WILMINGTON, DEL.—Dr. Virgil Jefferson Cox, Peach Bottom.

UNIVERSITY HOSPITAL, ANN ARBOR, MICH.—Dr. William Fredric Delp, Rural Retreat.

GRANT HOSPITAL, COLUMBUS, OHIO—Dr. John Camden Eakle, Sutton, W. Va.

WHITE CROSS HOSPITAL, COLUMBUS, OHIO—Drs. George Taylor Flesher, Ravenswood, W. Va., and William Riley Hutchinson, Boomer, W. Va.

HOSPITAL MUNICIPAL, GENERAL CITY HOSPITAL, MAYAGUEZ, PUERTO RICO—Dr. Carlos Encarnación-Vega, Cabo Rojo, Puerto Rico.

MUNICIPAL HOSPITAL, SAN JUAN, PUERTO RICO—Drs. Jaime Fuster y Fuster, Guayama, Puerto Rico; and José Roberto Vivas, Orocovis, Puerto Rico.

WISCONSIN GENERAL HOSPITAL, MADISON, WIS.—Dr. Claude Swanson Finney, Fredericksburg.

UNIVERSITY OF WISCONSIN HOSPITAL, MADISON, WIS.—Dr. John Leonard Jennings, Jr., Danville.

GORGAS HOSPITAL, ANCON, CANAL ZONE—Dr. Manuel Ferandez Fuster, Guayama, Puerto Rico.

MUHLENBURG HOSPITAL, PLAINFIELD, N. J.—Dr. Harry Lewis Glass, Carteret, N. J.

ORANGE MEMORIAL HOSPITAL, ORANGE, N. J.—Dr. Granville Musgrove Leaman, Brunswick, Md.

HOLY NAME HOSPITAL, TEANECK, N. J.—Dr. Joseph Herman Meadows, Oxford, N. C.

CHILDREN'S HOSPITAL, BOSTON, MASS.—Dr. Grey Carlton Hughes, Axton.

SOUTHERN PACIFIC GENERAL HOSPITAL, SAN FRANCISCO, CALIF.—Dr. Clarence Porter Jones, Jr., Newport News.

PIEDMONT HOSPITAL, ATLANTA, GA.—Dr. Jasper Herman Lamm, Lucama, N. C.

GRADY HOSPITAL, ATLANTA, GA.—Dr. Philip Wood Oden, Remington.

CHARITY HOSPITAL, NEW ORLEANS, LA.—Dr. James Edward Lipscomb, Jr., Greenville, S. C.

JACKSON MEMORIAL HOSPITAL, MIAMI, FLA.—Dr. Chaffee Aldred Scarborough, Franklin.

HILLMAN HOSPITAL, BIRMINGHAM, ALA.—Dr. Elam Cooksie Toone, Jr., Richmond.

Other graduates are:

Dr. Wilber Vinton Bradshaw, Victoria.
Dr. George Winford McCall, Richlands.
Dr. John Abb Payne, III, LaGrange.
Dr. David Edwin Plummer, High Point, N. C.
Dr. Hight Claudius Warwick, Orrum, N. C.

UNIVERSITY OF VIRGINIA

Commencement exercises of the Department of Medicine were held as usual in conjunction with those of the other departments of the University of Virginia, the dances and other events adding much to the social features of the occasion. Alumni day proved a general reunion occasion for all alumni regardless of their class affiliations and every one had a good time. Before degrees were conferred, Dr. John Lloyd Newcomb was installed as President of the University, the ceremony being very simple, but quite picturesque.

There were 390 graduates this year, fifty-two of these being from the Department of Medicine. Their names with hospital appointments follow:

UNIVERSITY OF VIRGINIA HOSPITAL, UNIVERSITY—Drs. George Robert Carpenter, Richmond; Walter Franklin Cole, Newport News; William Rollan

Hill, Statesville, N. C.; Lewis Littlepage, Jr., Norfolk; Charles Collins Orr, Jr., Asheville, N. C.; Lawrence James Pace, Harrisonburg; Mack Irvin Shanholtz, Winchester; Harry Benjamin Stone, Jr., Roanoke; and Fletcher Johnston Wright, Jr., Petersburg.

UNIVERSITY OF VIRGINIA, DEPARTMENT OF PATHOLOGY, UNIVERSITY, AND PRESBYTERIAN HOSPITAL, NEW YORK CITY—Dr. Noble Maxwell Goodloe, Staunton.

UNIVERSITY OF VIRGINIA, DEPARTMENT OF PATHOLOGY, UNIVERSITY—Dr. James Robert Shanklin, Gary, W. Va.

ST. ELIZABETH'S HOSPITAL, RICHMOND—Dr. John Newton Bowden, Red Hill.

MEMORIAL HOSPITAL, RICHMOND—Dr. Charles Lorraine Cabell, Richmond.

ST. VINCENT'S HOSPITAL, NORFOLK—Dr. Joseph Edward Gladstone, Jr., Exmore.

PROTESTANT HOSPITAL, NORFOLK—Drs. William Perry Moore, Jr., Norfolk; and Huge Page Newbill, Norfolk.

WESTERN STATE HOSPITAL, STAUNTON—Dr. John Omohundro Hurt, Roanoke.

JACKSON MEMORIAL HOSPITAL, MIAMI, FLA.—Dr. George Curtis Austin, Miami, Fla.

DUVAL COUNTY HOSPITAL, JACKSONVILLE, FLA.—Dr. Sullivan Gale Bedell, Jacksonville, Fla.

BAY VIEW HOSPITAL, BALTIMORE, MD.—Dr. George Simmerman Bourne, Wytheville.

UNION MEMORIAL HOSPITAL, BALTIMORE, MD.—Dr. William Allen Johns, Farmville.

CHURCH HOME AND INFIRMARY, BALTIMORE, MD.—Drs. Lewis Walke McIlhany, University; James Calvin Martin, Roanoke; and William Joshua Sturgis, Nassawadox.

BALTIMORE CITY HOSPITAL, BALTIMORE, MD.—Dr. John Hansford Thomas, Jr., Greenville.

VASSAR BROTHERS HOSPITAL, POUGHKEEPSIE, N. Y.—Dr. Harry Paul Browning, University.

BELLEVUE HOSPITAL, NEW YORK, N. Y.—Dr. Robert Nelson Cooley, Rural Retreat.

MORRISANIA CITY HOSPITAL, NEW YORK, N. Y.—Dr. Armando Joseph Lauritano, New York.

FRENCH HOSPITAL, NEW YORK, N. Y.—Dr. Richard Henry Smith, Stapleton, N. Y.

ORANGE MEMORIAL HOSPITAL, ORANGE, N. J.—Dr. Richard Reading Chamberlain, Maplewood, N. J.

BETH ISRAEL HOSPITAL, NEWARK, N. J.—Dr. Franklin Harry Cohen, Norfolk.

MERCER HOSPITAL, TRENTON, N. J.—Dr. George Alfred Hess, Bridgewater.

COOPER HOSPITAL, CAMDEN, N. J.—Dr. Isaac Nathan Patterson, Swedesboro, N. J.

LAKESIDE HOSPITAL, CLEVELAND, OHIO — Drs. William Clark Cooper, Langley Field; and William Clegg Eversole, University.

CITY HOSPITAL, CLEVELAND, OHIO—Dr. Lemuel Edward Mayo, Jr., Portsmouth.

CINCINNATI GENERAL HOSPITAL, CINCINNATI, OHIO—Dr. William Edgar Waddell, Jr., Lexington.

MCKEESPORT HOSPITAL, MCKEESPORT, PA.—Dr. Joseph Edwin Cox, Waynesboro.

GARFIELD MEMORIAL HOSPITAL, WASHINGTON, D. C.—Dr. Richard Earle de Butts, Upperville.

EMERGENCY HOSPITAL, WASHINGTON, D. C.—Dr. William Gilmer Puryear, South Boston.

WATTS HOSPITAL, DURHAM, N. C.—Dr. Howard Clark Glover, Jr., Newnan, Ga.

WILMINGTON GENERAL HOSPITAL, WILMINGTON, DEL.—Dr. John Bagby Haley, Charleston, W. Va.

DELAWARE HOSPITAL, WILMINGTON, DEL. — Dr. Roy Glenn Parks, Hopeton.

VIRGINIA MASON CLINIC, SEATTLE, WASH.—Drs. Walter Douglas Hankins, Johnson City, Tenn.; and William Virginius King, Jr., Thornhill.

BARONESS ERLANGER HOSPITAL, CHATTANOOGA, TENN.—Dr. Howard Thompson Holden, Rabun Gap, Ga.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN, BOSTON, MASS.—Dr. Clara Lucille Hoye, Louisa.

MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MASS.—Dr. Robert Fletcher Watson, University.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. Joseph Leigh Hundley, Callands.

HUNTINGTON MEMORIAL HOSPITAL, HUNTINGTON, W. VA.—Dr. Israel Maurice Kruger, Norfolk.

CHARITY HOSPITAL, NEW ORLEANS, LA. — Dr. James F. Lane, Charlottesville.

Dr. Julian Booth Doss, Penhook, Va., is also a graduate of this class.

Dr. Draper to Return to the U. S. Public Health Service.

It is with sincere regret that Virginia doctors generally have learned that Dr. Warren F. Draper,

our State Health Commissioner for the past three years, has been recalled by the United States Public Health Service to duty as assistant surgeon-general. He will be located in Washington, and will be in charge of the Bureau of Personnel and Accounts, effective July 1st. Dr. Draper has served our State most efficiently and will be missed by the citizens of Virginia who wish him well in his new field.

Dr. Riggin to Succeed Dr. Draper as Health Commissioner.

Dr. I. C. Riggin, who since August, 1932, has been director of rural health and tuberculosis and of the out-patient service of the Virginia State Department of Health, has been appointed State Health Commissioner of Virginia to succeed Dr. Draper, effective July 1st.

Dr. Riggin is a native of Maryland but has spent a good part of his professional life in private practice and health work in Virginia. As evidence of his liking for Virginians, he married Miss Ruth Bradshaw, of Isle of Wight County, Virginia. They have made their home in Richmond for the past two years.

The new Health Commissioner has had wide training and experience in public health administration.

Alexandria Meeting.

Only a little more than three months remain before our annual meeting in Alexandria, October 9th-11th, and we hope our members count on turning out in large numbers for this occasion. As it is fifty-five years since our last meeting in that city, it will be the first time in the history of the majority of those who are able to attend that we have met in that historic city, so let's boost the meeting! By the way, if any of our members recall that meeting, we would be glad to hear about it.

Cards were recently sent all members, that those who wish may submit titles and abstracts for volunteer papers for the program. Don't forget that these have to be in the Society's office in Richmond by August 1st.

American Medical Association.

At the annual meeting of this Association, held in Cleveland, June 11th-15th, Dr. Walter L. Bierring, Des Moines, Iowa, succeeded to the presidency, and Dr. James S. McLester, Birmingham, Ala., an alumnus of the University of Virginia, Department of Medicine, Class of '99, was named president-elect. The following other officers were also elected at this time: Vice-President, Dr. George G. Reinle, Oakland, Calif.; Secretary, Dr. Olin West, Chicago; Treasurer, Dr. Herman L. Kretschmer; Speaker of the House of Delegates, Dr. Frederick C. Warnshuis, Grand Rapids, Mich.; and Vice-Speaker of the House, Dr. Nathan B. Van Etten, New York. The four last named officers were all re-elected.

Honorary awards for scientific exhibits were presented to Drs. Vincent W. Archer, S. D. Blackford, and J. E. Wissler, of University, Va.

The Medical Society of Virginia was represented by their three delegates, Drs. Warren F. Draper, J. C. Flippin, and Hugh H. Trout.

The following doctors were registered from Virginia:

Dr. E. L. Alexander, Newport News.
Dr. Howard Armstrong, Harrisonburg.
Dr. Vincent W. Archer, University.
Dr. O. O. Ashworth, Richmond.
Dr. Regena C. Beck, Richmond.
Dr. W. E. Bray, University.
Dr. W. C. Caudill, Pearisburg.
Dr. A. H. Cecha, Hampton.
Dr. John E. Collier, Richmond.
Dr. Charles E. Conrad, Harrisonburg.
Dr. Albert V. Crosby, Norfolk.
Dr. L. O. Crumpler, Danville.
Dr. Donald S. Daniel, Richmond.
Dr. R. M. DeHart, Floyd.
Dr. J. H. Deyerle, Harrisonburg.
Dr. W. K. Dix, Richmond.
Dr. Warren F. Draper, Richmond.
Dr. J. C. Flippin, University.
Dr. R. W. Fowlkes, Richmond.
Dr. R. V. Funsten, University.
Dr. A. O. Hanson, Richmond.
Dr. Wm. L. Harris, Norfolk.
Dr. I. C. Harrison, Danville.
Dr. Emory Hill, Richmond.
Dr. Fred M. Hodges, Richmond.
Dr. Guy W. Horsley, Richmond.
Dr. J. Shelton Horsley, Richmond.
Dr. K. W. Howard, Portsmouth.
Dr. James W. Hunter, Norfolk.
Dr. I. H. Hurt, Roanoke.
Dr. Louise T. Jones, McLean.
Dr. Thomas D. Jones, Richmond.
Dr. John W. Kerr, Fort Monroe.
Dr. Linwood D. Keyser, Roanoke.
Dr. M. N. King, Norfolk.
Dr. Southgate Leigh, Norfolk.
Dr. Walter B. Martin, Norfolk.
Dr. W. P. McDowell, Norfolk.
Dr. W. A. McGee, Richmond.
Dr. J. T. McKinney, Roanoke.

Dr. J. B. Nicholls, Catawba Sanatorium.
Dr. R. L. Payne, Norfolk.
Dr. Charles H. Peterson, Roanoke.
Dr. W. B. Porter, Richmond.
Dr. Julian L. Rawls, Norfolk.
Dr. Max Schoenbaum, Richmond.
Dr. A. M. Showalter, Christiansburg.
Dr. Reuben F. Simms, Richmond.
Dr. Hunter B. Spencer, Lynchburg.
Dr. James B. Stone, Richmond.
Dr. L. E. Stubbs, Newport News.
Dr. Lee E. Sutton, Richmond.
Dr. Oscar Swineford, University.
Dr. E. H. Terrell, Richmond.
Dr. D. M. Thomasson, Lynchburg.
Dr. George A. Torrence, Hot Springs.
Dr. Hugh H. Trout, Roanoke.
Dr. J. R. Tucker, Williamsburg.
Dr. James T. Tucker, Richmond.
Dr. A. E. Turman, Richmond.
Dr. Warren T. Vaughan, Richmond.
Dr. Fred J. Wampler, Richmond.
Dr. J. S. Weitzel, Richmond.
Dr. Pauline Williams, Richmond.
Dr. B. S. Yancey, Harrisonburg.

Those who have reported on the Cleveland meeting state that it was excellent in every detail.

Married.

Dr. Rogers Newton Harris, Port Royal, Va., and Miss Mary McLaughlin, Lynchburg, Va., May 19th.

Dr. R. Angus Nichols, Jr., and Miss Elizabeth Williams, both of Richmond, Va., June 1st.

Dr. William Beverley Wilkins and Miss Gladys Nichols, June 2nd. Dr. Wilkins is a member of the class of '32, University of Virginia, and interned at Fairfield, Ala. He is now located at 913 Prince Street, Alexandria, Va.

Dr. E. Terrill Montgomery, class of '30, Medical College of Virginia, and Miss Joan Marie Kimble, Honesdale, Pa., June 16th. They will make their home in Garden City, Long Island, N. Y.

Dr. Laurie Walker Moore, class of '31, Medical College of Virginia, Beaufort, N. C., and Miss Anne Pryor Neale, Lanesville, Va., June 2nd.

Dr. Dawson Edward Watkins, Jr., recently connected with the Buxton Clinic, Newports News, Va., but now of Waynesboro, Va., and Miss Mary Evelyn Stephenson, Buena Vista, Va., June 23rd.

Dr. James Woodfin Keever and Miss Beulah Icard Streetman, both of Hickory, N. C., May 20th. Dr. Keever is an alumnus of the Medical College of Virginia, class of '27, and was for sometime connected with the medical staff of Pine Camp Hospital, Richmond, Va.

Dr. Archibald Cary Randolph and Mrs. Rebecca Dulaney McElhone, both of Upperville, Va., June 2nd.

Dr. J. B. Tuttle and Mrs. Minnie H. Buchanan, both of Craigsville, Va., June 7th.

Reunion of Class of '09, M. C. V.

At the recent finals of the Medical College of Virginia, the 1909 class in medicine of the University College of Medicine held its twenty-fifth reunion. Of the thirty-three members now living, eighteen were present. They attended the general alumni banquet on Monday night at the Jefferson Hotel and on Tuesday were entertained at luncheon at the Westmoreland Club by Dr. Sidney A. Slater, Superintendent of the Southwest Minnesota Sanatorium, a member of the class who has attained a high place in the field of tuberculosis.

Dr. A. B. Grubb spoke of the nine members of the class who have passed to their reward. Since the reunion five years ago Dr. C. W. Byrd, of New York, and Dr. M. T. Hickman, of North Carolina, have joined their fathers. Resolutions of sympathy on the death of Dr. G. P. LaRoque were adopted.

There were present Drs. J. C. Anderson, Chatham; H. H. Bowles, Summit, N. J.; M. W. Crafford, Lee Hall; L. Davis, Roanoke; R. C. Fravel, Woodstock; A. B. Gravatt, Ellerson; A. B. Grubb, Cripple Creek; C. L. Harrell, Norfolk; R. E. Hughes, North Holston; J. C. Ray, Whitakers, N. C.; G. H. Reese, Petersburg; C. R. Russell, Granite Falls, N. C.; F. G. Sigmon, Spencer, N. C.; S. A. Slater, Worthington, Minn.; J. W. Smith, Hayes Store; T. J. Tudor, Norton; W. R. Warriner, Crewe, and W. R. Weisiger, Richmond.

Dr. F. L. Finch,

Recently of Urbanna, Va., has moved to Richmond, Va., where he is associated with Dr. W. H. Parker in general practice, with offices at 602 West Franklin Street. He is a member of the class of '32, Medical College of Virginia, and interned at St. Luke's Hospital, Richmond.

At American Hospital, Paris.

Dr. W. A. Farmer and Dr. D. R. McEachern, both of whom were on the surgical service of the Hospital Division of the Medical College of Virginia for the past year, sailed on June 28th for Paris, where they have received appointments for a year's service at the American Hospital.

Dr. James S. Dryden,

Class of '33, Medical College of Virginia, who has just completed a year's internship at St. Vincent's Hospital, Norfolk, Va., has located at Jeffs, Va., for general practice.

Dr. Stephen J. Beeken,

Who graduated from the Medical College of Virginia last year, has just completed his internship at Lewis Gale Hospital, Roanoke, Va., and is locating in Cambria, Va., for general practice. He will be connected with the New Altamont Hospital in Christiansburg, Va.

American Gynecological Society.

This Society, at its annual meeting at Greenbrier Hotel, White Sulphur Springs, W. Va., May 21st-23rd, elected the following officers for the ensuing year: President, Dr. Brooke M. Aunspach, Philadelphia; treasurer, Dr. George W. Kosmak, New York City; and secretary, Dr. Otto H. Schwarz, St. Louis. The date and place of next meeting will be named later.

Medical College of Virginia News.

Dr. Hans Kleinmann, lately of the University of Berlin, joined the faculty of the Medical College of Virginia, June 1st, as associate in pathology. Dr. Kleinmann has published an unusually long list of books and articles in his special field. For ten years he was first assistant of Professor P. Rona, of the chemical department of the Biological Institute of the University of Berlin, Charite. He holds both the degree of Doctor of Medicine and Doctor of Philosophy from the University of Berlin.

His work for the Medical College has been made possible through a grant from the Rockfeller Foundation and from the Emergency Committee in Aid of Displaced Foreign Physicians, New York.

Dr. Kleinmann's work here will be mainly research in the chemical aspects of pathology.

The outpatient department report for the month of May shows 5,675 patient visits to the clinic with an average of 225 patients per clinic day.

The fourth Saint Philip Hospital Post-Graduate Clinic at the Medical College of Virginia, which is subsidized by the General Education Board of New York, opened June 18th and will continue through June 30th. Increasing interest in this clinic by Negro physicians is shown by the fact that thirty-six physicians matriculated. Four states are represented: Virginia, North Carolina, South Carolina, and Georgia.

The regular scientific monthly meeting of the staff of the college was held Thursday, May 10th. The program was as follows:

Relation of the Anterior Hypophysis to Carbohydrate Metabolism, by Dr. E. I. Evans, Washington, D. C.

Further studies upon Alveolar Carbon Dioxide, by Dr. R. J. Main, assistant professor of physiology and pharmacology.

Dr. Evans is director of the laboratories of the Bureau of Dairy Industry, United States Department of Agriculture, Washington. He is working with Dr. William R. Bond, professor of physiology at the college, on the problem of making moving picture studies of the developing fertilized rabbit ovum.

Dr. Lawrence T. Price has resigned his position as professor of clinical genito-urinary surgery, effective July 1st, after a service of some years with the college.

Dr. A. B. Carr, '21, of War, W. Va., was a recent visitor to the college.

News from Jefferson Medical College.

The One Hundred and Ninth Annual Commencement was held in the American Academy of Music on June 1st. The Valedictory Address was delivered by Dr. Ralph Dorn Hetzel, President, The Pennsylvania State College. The subject of the Address was "Some Current Assets and Liabilities."

The Graduating Class numbered 143, bringing the total number of graduates to 15,900. The graduates were registered from twenty-four different states and insular possessions and one foreign country. Forty-five members of the Graduating Class were commissioned as First Lieutenants in the Medical Officers' Reserve Corps of the United States Army.

The Annual Alumni Dinner was held on May 31st, at which time busts of Mr. Alba B. Johnson, President of the Board of Trustees, and Dr. Ross V. Patterson, Dean of the College and Sutherland M. Prevost Professor of Therapeutics were presented to the College.

Announcement was made by Mr. Alba B. Johnson, President of the Board of Trustees, that Dr. Ross V. Patterson, Dean of the College, had been elected Sutherland M. Prevost Professor of Therapeutics, succeeding Dr. E. Quin Thornton, who has been made emeritus Professor of Therapeutics. Dr. Patterson is a graduate of the Jefferson Medical College, Class of 1904, and has been Dean of the College since 1906.

Dr. Michael A. Burns, Associate Professor of Nervous and Mental Diseases has been elected Professor of Neurology. Dr. Burns is a graduate of the Jefferson Medical College, Class of 1907, and has been connected with the teaching corps of the College since 1908.

The Graduating Class of 1934 presented a portrait of Dr. J. Torrance Rugh, James Edwards Professor of Orthopedic Surgery, to the College on April 27, 1934.

The following promotions in the teaching corps have been made during the past session:

John M. Fisher, M. D., Clinical Professor of Surgery.

John T. Brundage, Ph. D., M. D., Assistant Professor of Pharmacology.

Robert M. Lukens, M. D., Assistant Professor of Bronchoscopy and Esophagoscopy.

Henry B. Decker, M. D., Associate in Dermatology.

Henry I. Seelaus, Associate in Surgery.

Arthur J. Wagers, M. D., Associate in Larynogology.

William J. Harrison, M. D., Associate in Ophthalmology.

Harold W. Stewart, M. D., Associate in Pathology.

News Notes from the Duke University School of Medicine and Duke Hospital.

On May 12th, Dr. H. E. Sigerist, Professor of Medical History, Johns Hopkins University School of Medicine, gave a lecture in the Duke Hospital amphitheatre on Medical History, and also gave the annual Alpha Omega Alpha address; subject, Civilization and Disease.

On the same date, Dr. Robert W. Johnson, Jr., Assistant Professor of Orthopedic Surgery at Johns Hopkins University School of Medicine, lectured at the Duke Hospital on Fractures.

During the spring quarter, the following students were elected to the Alpha Omega Alpha fraternity: Eugene N. Scadron and Edwin M. Rucker.

At the graduating exercises held at Duke University June 6th, thirty-three medical students received the degree of Doctor of Medicine and five received the degree of Bachelor of Science in Medicine. At the same time, twenty-two nurses received their diplomas in Nursing.

Dr. Jesse McCall,

Recently of Pageton, W. Va., has located at Newton, N. J., where he will be engaged in general practice. He is a member of the class of '31, Medical College of Virginia and, after completing an internship at the Boston City Hospital, served as a resident physician at Memorial Hospital, Newton, N. J.

Dr. Paul S. Richards,

Class of '32, Medical College of Virginia, has located for general practice at Butler, N. J. He served his internship at the Orange Memorial Hospital, Orange, N. J.

Dr. John T. Hazel,

Formerly of Clarendon, Va., has been transferred from Philadelphia to the U. S. Marine Hospital, Boston (Chelsea), Mass.

Site of Chimborazo Hospital Marked.

A bronze tablet attached to a water worn boulder was unveiled on May 26th on the site of the old Chimborazo Hospital, Richmond, Va. This hospital was operated during the War Between the States and, at that time, was the largest military hospital in the world. The tablet was placed by the Confederate Memorial Literary Society.

Elected to Phi Beta Kappa.

Dr. Henry Dawson Furniss, gynecologist of New York City, and Dr. George Tully Vaughan, for some time professor of surgery in Georgetown University, Washington, D. C., were the two alumni elected to membership in the Phi Beta Kappa, national honor society, at the University of Virginia, this commencement. Dr. Furniss is of the class of '99 and Dr. Vaughan of the class of '79.

Dr. L. Jacobs,

Of the class of '27, Medical College of Virginia, and who later took post-graduate work in diseases of the eye, ear, nose and throat in Vienna, has located in Norfolk, Va., with offices in Wainwright

Building. His practice is limited to the above named specialty.

Dr. J. A. Noblin,

East Radford, Va., was in May elected president of the Radford Rotary Club for the coming year.

Dr. H. Rudolph Hartwell,

Recently of Troutville, Va., has located in Roanoke, Va., with offices in the Medical Arts Building. Dr. Hartwell is an alumnus of the Medical College of Virginia, class of '29.

Dr. Barton B. McCluer,

After spending the winter and spring months in Powhatan County, Va., has returned to his home at Rockbridge Baths, Va.

The Memorial Hospital for the Treatment of Cancer and Allied Diseases,

New York City, celebrated its fiftieth anniversary in May. On the evening of the 24th, the Medical Board of the Hospital conducted a scientific meeting at the New York Academy of Medicine, at which time several papers were presented. On the 25th, Dr. J. Shelton Horsley, Richmond, Va., by invitation, took part in a symposium at the Memorial Hospital, on Gastric Cancer. Other speakers on this occasion were: Dr. Louis I. Dublin, Dr. James Ewing, Dr. Lewis Gregory Cole, Dr. Gaston Labat, Dr. Fordyce Barker St. John, and Dr. George T. Pack, of New York, and Dr. Seale Harris, of Birmingham, Ala.

There were also other symposia on various phases of cancer.

Drs. Ashworth and Pinckney Associated.

Dr. O. O. Ashworth, Richmond, Va., announces that Dr. Morton Morris Pinckney, also of Richmond, is now associated with him in the practice of medicine, with offices in Medical Arts Building, this city.

The West Virginia State Medical Association

Held its annual meeting in Huntington, the middle of May, with a registered attendance of 405 members out of 1,087—an excellent attendance and the largest in the history of the Association. Wheeling was selected as the 1935 place of meeting and Dr. R. H. Walker, of Charleston, was elected President. He will serve as President-elect until January 1st, at which time he will take over the duties of Dr. Roy Ben Miller, of Parkersburg, who remains president to that time. Dr. Wm. W. Strange, Huntington, and Dr. Robt. C. Hood, Clarksburg, were elected as vice-presidents; and Dr. T. M. Barber, Charleston, and Mr. Joe W. Savage, also of Charleston, were re-elected treasurer and secretary, respectively.

Dr. Edgar W. Young,

Petersburg, Va., who was sick for sometime in the Petersburg Hospital, is now well and has resumed his practice.

New Department at Norfolk Protestant Hospital.

The Norfolk (Va.) Protestant Hospital has recently had installed a new Roentgen ray department, known as the F. S. Royster Memorial. This was the gift of Mr. Royster's children and has been supplied with the most up-to-date equipment.

Dr. A. M. McLaughlin

Has located for practice at Waynesboro, Va. He is a member of the class of '32, Medical College of Virginia, and served an internship at Johnston-Willis Hospital, Richmond.

Dr. John Jacquelin Ambler,

Class of '31, University of Virginia, Department of Medicine, has received an appointment at Doctors' Hospital, New York City. He has recently been located at the New Haven Hospital, New Haven, Conn.

The South Carolina State Medical Association,

At its annual meeting in Charleston, in May, installed Dr. William Egleston, Hartsville, as president, and named Dr. Samuel E. Harmon, Columbia, as president-elect. Dr. Edgar A. Hines, Seneca, was elected secretary for the twenty-fifth year. The 1935 meeting is to be held in Florence.

Dr. J. E. Hamner,

Who has been taking post-graduate work at the Hospital Division of the Medical College of Virginia, Richmond, has returned to his home at Rainelle, W. Va., where he is specializing in diseases of the eye, ear, nose and throat.

Dr. R. C. Cecil, who has been interning in the hospitals of the Medical College of Virginia, will be associated with Dr. Hamner after July 15th.

Dr. Wilkins J. Ozlin,

Who has been connected with the medical staff at Catawba Sanatorium, Va., has located at South

Hill, Va. He will be engaged in general practice, with special attention to diseases of the chest.

Statement of Venereal Diseases Reported by the Public Health Service.

The following statement for April, 1934, furnishes current data as to the prevalence of venereal diseases:

State	SYPHILIS Monthly case rates per 10,000 population	GONORRHEA Monthly case rates per 10,000 population
Alabama	1.19	0.32
Arizona	.49	2.89
Arkansas	2.87	1.18
California (b)	---	---
Colorado (a)	---	---
Connecticut (c)	1.36	.58
Delaware	3.73	2.16
Dist. of Columbia	2.99	1.80
Florida	1.94	.32
Georgia	1.93	1.16
Idaho	---	---
Illinois	2.42	1.65
Indiana	.44	.40
Iowa (c)	.47	.53
Kansas	.68	.33
Kentucky	.73	1.14
Louisiana	.97	.63
Maine	.52	.61
Maryland	3.99	1.58
Massachusetts	.90	1.00
Michigan	.96	.68
Minnesota	1.46	1.17
Mississippi	5.16	7.33
Missouri	1.70	.82
Montana (c)	.97	.24
Nebraska	.31	.41
Nevada (a)	---	---
New Hampshire	.30	.30
New Jersey	1.65	.52
New Mexico	1.75	.58
New York	3.74	.88
North Carolina	3.01	.85
North Dakota	.39	.58
Ohio (c)	.88	.34
Oklahoma (c)	.64	.48
Oregon	.19	.60
Pennsylvania (b)	---	---
Rhode Island	.64	.67
South Carolina (c)	2.31	2.87
South Dakota	.03	.24
Tennessee	4.43	1.62
Texas	.25	.04
Utah (a)	---	---
Vermont	.53	.50
Virginia	1.46	.95
Washington	1.00	1.21
West Virginia (b)	---	---
Wisconsin (d)	.11	.52
Wyoming (a)	---	---
Total	1.74	0.96

(a) Not reporting.

(b) Have been reporting regularly but no report received for current month.

(c) Incomplete.

(d) Only cases of syphilis in the infectious stage are reported.

Surveys in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhea.

Dr. Banting Honored.

Dr. Frederick Grant Banting, for the past ten years professor of medical research at the University of Toronto School of Medicine, Toronto, Canada, was knighted by King George, of England, on June 3rd, this honor being bestowed in recognition of his discovery of insulin.

Officers in Lions Club.

At the annual meeting of the Lions Club of Farmville, Va., in June, Drs. H. C. Alexander and W. E. Smith of that city were elected as two of the directors. Dr. Thos. G. Hardy was the retiring president.

Medical Society of the State of North Carolina.

At the annual meeting of this Society, recently, Dr. Paul P. McCain, Sanatorium, was installed as president for the coming year, Dr. Paul H. Ringer, of Asheville, was chosen as president-elect, and Dr. L. B. McBrayer, of Southern Pines, was re-elected secretary. It was voted to hold the next annual session at Pinehurst, May 6-8, 1935.

The American Psychiatric Association

Held its annual meeting at the Waldorf-Astoria, New York City, May 28th, with the president, Dr. George H. Kirby, of New York, presiding. More than 700 psychiatrists and physicians attended the opening dinner of the Association. Those noted from Virginia were: Dr. G. W. Brown, Williamsburg; Dr. J. K. Hall, Dr. E. H. Alderman, Dr. H. DeJ. Coghill and Dr. C. T. Wilfong, from Richmond; Dr. G. B. Arnold, Colony; and Dr. H. C. Henry, Dr. M. S. Brent and Dr. T. L. Gemmell, from Petersburg. Drs. Arnold and Wilfong were elected to membership this year.

At this meeting, the eight living ex-presidents were given badges of honor. Among these was Dr. William F. Drewry, of Richmond, Va. Being unable to attend on account of sickness, his badge was received for him by his daughter, Miss Phoebe Drewry, a graduate student at Columbia University, New York.

Dr. C. Fred Williams, Columbia, S. C., was installed as president; Dr. Clarence O. Cheney, New York, was chosen president-elect; and Dr. William C. Sandy, Harrisburg, Pa., was re-elected secretary-treasurer.

The 1935 meeting is to be held in Washington, D. C.

American Association of Genito-Urinary Surgeons.

At the annual meeting of this Association in May, Dr. Robert C. Bryan, Richmond, Va., was inducted into office as president for the ensuing year, Dr. James D. Barney, Boston, was named president-elect, and Dr. Henry I. Sanford, Cleveland, was re-elected secretary.

Dr. R. P. Hawkins, Jr.,

Clifton Forge, Va., was named as one of the directors of the Mountain National Bank, which opened recently in that city.

Alpha Epsilon Iota,

National fraternity for medical women, held its biennial meeting in Richmond, Va., May 31st through June 2nd, with Pi Chapter of the Medical College of Virginia as hostess. At this meeting, the following officers were elected: President, Dr. Margaret Reynolds, New York; Vice-President, Dr. Olga Hansen, Minneapolis; Secretary, Dr. Luvia Willard, New York; Treasurer, Dr. Helen Cary, Portland, Oregon; Editor-in-Chief, Dr. Margaret Nicholson, Washington; Associate Editor, Dr. Ruth Stone Stelle, Dryden, N. Y.; and Archivist, Dr. Jenne Cady Solis, Ann Arbor, Mich.

Following the meeting, a number of the visitors enjoyed the sight-seeing trip to Williamsburg and vicinity, arranged by the local chapter.

Wanted—

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Obituary Record

Dr. Walter Edward Beattie,

One of the best known of the younger physicians of Alexandria, Va., died June 9th, following an illness of three days due to a throat infection. He was twenty-nine years of age and graduated in medicine from the Georgetown University, Washington, D. C., in 1929. Dr. Beattie was a member of the medical staff of the Alexandria Hospital and, for the past two years had been city coroner. He was a member of the Kiwanis Club and several other organizations. Dr. Beattie was secretary of the Alexandria Medical Society and had been a member of the Medical Society of Virginia for several years. His wife and two daughters survive him.

The Alexandria (Va.) Medical Society has adopted the following resolutions on the death of Dr. Beattie:

WHEREAS, That in the death of Dr. Beattie is sustained the loss of one of our most gifted, useful, and capable, young members of the Medical Society of Alexandria; therefore,

Be it Resolved, That we give expression to the feelings of heartfelt sorrow that overwhelm us because of his untimely death; that we feel by his departure in the prime of his life and his unfinished career, his chosen city has lost an ardent helper and the science of medicine an earnest and able worker.

Resolved, That we extend our sincere sympathy to his sorrowing family, and

Resolved further, That a copy of these resolutions be transmitted to the bereaved family and spread on the minutes of the Staff of the Alexandria Hospital and published in our daily paper and in the JOURNAL OF THE MEDICAL SOCIETY OF VIRGINIA.

S. B. MOORE, M. D.,
W. T. BURCH, M. D.,
O. A. RYDER, M. D.,
Committee.

Dr. Wyatt S. Beazley, Sr.,

Well-known physician of Richmond, Va., died June 6th, after a long illness. He was a native of Greene County, Virginia, and was sixty-six years of age and received his medical degree from the Medical College of Virginia in 1893. Dr. Beazley had practiced medicine in Richmond for the last forty-two years. He had been a member of the Medical Society of Virginia for forty years, and was also a member of several other organizations. His wife, three daughters and a son, Dr. Wyatt S. Beazley, Jr., of Richmond, survive him.

Dr. Isaac Errett Wolfe,

Widely known physician of Southwest Virginia, died at a Richmond hospital, June 20th, after an illness of two weeks. The burial was at his home, Coeburn, Va. Dr. Wolfe was a native of Scott County, Va., and fifty-seven years of age. He re-

ceived his medical degree from the University of Louisville, Ky., and later took post-graduate work in New York. During the World War he served in the medical corps of the Army, with the rank of captain. He was a Mason, a member of the American Legion, the Clinch Valley Medical Society, and the Medical Society of Virginia. He is survived by his wife and a daughter. One of his brothers is Dr. Joseph B. Wolfe, of Coeburn.

Dr. Chester Allen Amos,

Alexandria, Va., was killed instantly June 10th when the car which he was driving collided with a freight train. He was forty-one years of age and a graduate of the University of Virginia, School of Medicine, in 1917. Dr. Amos had been a member of the Medical Society of Virginia for twelve years. He is survived by his wife and one daughter.

Dr. George B. Young.

The following tribute was paid the memory of Dr. Young, at a recent meeting of the Albemarle Medical Society:

The Albemarle Medical Society wishes to record its deep sorrow and sense of loss in the death of Dr. George Bright Young, February 13, 1934.

Dr. Young's medical training was obtained at the University of Virginia and the University of Maryland, from which latter institution he graduated in 1887. He first practiced in Orange, Va., later spent a year or more in New York hospitals and finally entered the United States Public Health Service in 1890. The major portion of Dr. Young's professional life was devoted to the Public Health Service. The most meager reference to his connection with the Service would be incomplete without mention of his achievements in cholera prevention for the immigration authorities in 1893, his sane administration of train inspection for yellow fever in 1905 and his outstanding accomplishments as health commissioner for the city of Chicago from 1911 to 1915. From January, 1917, to April, 1919, he was "loaned" to the Naval Department and functioned as sanitary officer for the Fifth Naval District. He retired from the Service in August, 1924, with the rank of senior surgeon.

Dr. Young's membership in the Albemarle Medical Society began with his assumption in the fall of 1924, of the duties of joint health officer for Charlottesville and Albemarle County along with the associate professorship of public health in the Medical School of the University. His eminent qualifications for these positions permitted him to put his new work on an effective basis with unusual promptness. By his sure knowledge and executive tact, he quickly secured the approbation and cooperation of the practicing physicians and, further, was successful in increasing the intelligent interest of the laity in the problems of public health and in securing their support for remedial measures. He was equally successful in his teaching contacts with the senior medical students at the University. Ill health necessitated his retirement in 1931.

In Dr. Young's relatively short but active association with the Albermarle Medical Society he won the esteem of his colleagues as a truly scientific physician and their respect and affection for him as a man. His life was one of real attainment and unselfish service. The sincere sympathy of the members of the Society goes out to his family.

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Dr. William W. Buck,

Rural Retreat, Va., died March 25th, of heart disease and nephritis. He was seventy-seven years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1885. Dr. Buck was formerly a member of the Medical Society of Virginia, having resigned sometime ago on account of his health.

Dr. William Edward Cook,

An alumnus of the Medical College of Virginia, Richmond, class of '01, died at his home in Pageton, W. Va., on May 5th, death being due to chronic myocarditis. He was sixty-three years of age and a World War veteran.

Dr. Peter D. Argobast,

Morgantown, W. Va., died on March 31st, aged sixty-seven years. He was graduated in medicine from the University of Virginia, Charlottesville, in 1901.

Dr. Joseph L. Spruill,

Jamestown, N. C., a past president of the Seaboard Medical Association of Virginia and North Carolina, died on May 5th, after a long illness. He was sixty-three years of age and a graduate of the University of Maryland School of Medicine, Baltimore, in 1895. At the time of his death he was medical superintendent of the Guilford County (N. C.) Tuberculosis Sanitarium.

Dr. Robert Hill Davis,

For many years a resident of St. Louis, Mo., where he was connected with the dermatalogical department of the University of St. Louis, died at University, Va., June 19th, at the age of fifty-nine. He graduated in medicine at the University of Virginia in 1901 and later studied in Berlin and Vienna. Two sons survive him. He was a brother of the late Dr. John Staige Davis, of the University of Virginia.

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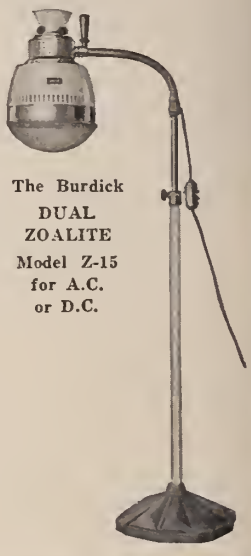
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CANCER OF THE STOMACH.*

J. Shelton Horsley, M. D.,
Richmond, Va.

The Incidence of Cancer of the Stomach

Cancer is one of the world's greatest problems. A disease whose mortality rate has risen in rank from sixth among the causes of death in 1900 and in 1920, to the second place in 1929, challenges our attention. According to the numbers of deaths it creates it is now second in importance only to heart disease. In 1932 the total number of deaths from cancer in the United States Continental Registration Area, except Utah, was 122,339, being a death rate of 102.2 per 100,000 of population. Even since 1920 this has been increased from a death rate of 83.4, or 72,931 total deaths.

According to the latest census statistics available for the United States, except Utah, cancer of the digestive tract and peritoneum caused 60,607 deaths in 1932, being a death rate of 50.7 and constituting about one-half of the total deaths from cancer. It is somewhat difficult to compare the present death rate from cancer of the gastro-intestinal tract and peritoneum with that in earliest years, because the statistics were kept differently, but this proportion of the death rate from cancer of the gastro-intestinal tract and peritoneum, representing as it does about one-half of all of the deaths from cancer, seems to hold rather consistently.

According to Eusterman, of the Mayo Clinic (Wilbur, D. L.: Carcinoma of the Stomach of Patients Less than Forty Years of Age—Report of Three Cases, Proc. of Staff Meetings of the Mayo Clinic, October 11, 1933), one-third of all deaths from carcinoma in men, and one-fifth in women, are from cancer of the stomach, and he estimates that in the United States there are 38,000 deaths every year from gastric cancer. Gastric cancer is more common in persons over forty years of age, 95 per cent of this disease being found between the age of forty and sixty-nine, according to Eusterman, who states that the average age of men with gastric cancer is fifty-four, and of women fifty-three.

Carcinoma of the stomach does occur, however, though rarely, in the young. According to D. L. Wilbur, there have been recorded in the literature two cases of cancer of the stomach in which the condition was congenital, and Cullingsworth observed it in an infant five weeks of age. Osler and McCrae (Osler, W., and McCrae, T.: Cancer of the Stomach in the Young, *N. Y. Med. J.*, 71:581, April 21, 1900) collected reports of six cases of gastric cancer in patients under ten years of age. Consequently, it is a disease that cannot be dismissed from diagnostic possibilities merely because the patient is young.

Cancer of the stomach is responsible for far more deaths than cancer of any other single organ or viscus of the body, though of course it is not so frequent in occurrence as cancer of the skin, in which early diagnosis can be made and satisfactory treatment promptly initiated. It is no wonder, then, that gastric cancer, causing as it does such a large and increasing mortality and frequently accompanied by a difficult and obscure diagnosis, challenges our most earnest consideration.

Etiology

Cancer should more properly be classified as a group of different types of diseases, just as contagious diseases are classified, the different types having some characteristics in common. Cancers

*Read before the New York Polyclinic Medical Association, in New York, March 5, 1934.

of the same organ may differ and even the same type of cancer, as adenocarcinoma, shows variations as to its structure and sensitiveness to radiation or liability to early metastases.

The cause of cancer of the stomach, as the cause of cancer elsewhere, is an interesting problem that has not been solved, though apparently it is not due to a micro-organism. The fact that we have not discovered the cause of cancer is not an overwhelmingly discouraging obstacle to treatment. Many of the diseases of whose exact etiology we are ignorant are amenable to preventive or to curative measures, as smallpox, spotted fever; and even in those with definite bacterial etiology, such as syphilis, tuberculosis, and diphtheria, we are ignorant of the causes of the bacteria. So in these latter diseases we have merely gone forward one biologic step to confront an apparently insuperable wall of etiology.

The causes of gastric cancer are important because they may suggest an earlier diagnosis. If there can be found some measure which will indicate and enable us to remove precancerous lesions, or to create a condition in which cancer is less likely to occur, it will be a great help. We know that in the regions where lesions can be readily inspected, cancer appears to arise always from some pre-existing benign lesion. Cancer of the lip or the mouth from the chronic irritation of smoking, ill-fitting dentures, or bad teeth, cancer of the cervix uteri from pre-existing lacerations or ulceration, cancer of the rectum or lower sigmoid from polyps or ulcers, have been fully studied. If, then, in regions that can be easily inspected, we accept a rule which is the doctrine of most pathologists that cancer always arises from some previous benign lesion, we have no right to hold that the stomach is an exception to this rule merely because it cannot be readily seen.

The etiological relation between gastric peptic ulcer and gastric cancer is disputed, not as to the occurrence of this relationship, because this is acknowledged by all who have extensively studied this subject, but as to the percentage of cancers whose origin is in peptic ulcer, or, to put it another way, the percentage of gastric peptic ulcers that become cancerous. Gastric peptic ulcer is much less common than duodenal ulcer, the ratio being about one gastric ulcer to from four to eight duodenal ulcers. That the original estimate of more than 50 per cent of gastric ulcers that became cancer was too high is, I think, generally acknowledged. Dr. Margaret Warwick (Warwick, Margaret: Analysis of One Hundred and Seventy-Six Cases of Carcinoma of the Stomach Submitted to Autopsy, *Ann. Surg.*, pp. 216-226, August, 1928) has shown in a series of 176 necropsies in cases of gastric cancer that slightly more than half of gastric cancers do not ulcerate, and this alone would be sufficient evidence to confute this alleged high percentage of gastric cancers from peptic ulcers. Most roentgenologists with extensive gastro-intestinal experience agree that any ulcer along the greater curvature of the stomach that can be demonstrated by X-rays is almost always cancerous. This observation does not apply to the lesser curvature and the pylorus, but it would seem that in an organ in which the occurrence of malignancy is so common, it would be illogical to state that any focus of chronic irritation does not produce cancer. I have had several cases in which the evidence that cancer arises from a peptic ulcer of the stomach seems convincing, unless one prefers to assume the attitude of the farmer who, when looking at a giraffe, declared there was no such animal.

One case in point is that of Mrs. L. H., who had had gastric symptoms of fifteen years and, finally, at the age of seventy years, a partial gastrectomy was done and an ulcer was found along the lesser curvature. On examination this seemed to be a peptic ulcer except at one point where definite cancerous tissue was found. (Horsley, J. Shelton: Peptic Ulcer and Cancer of the Stomach, *Jour. Am. Med, Asso.*, 92:1813-1816, June 1, 1929.)

In another case, a young man thirty-four years of age (G. H. W.) had had gastric symptoms for eight years. He entered the hospital for operation, and there was perforation of the ulcer a half-hour before operation. A partial gastrectomy was done, and the tissue around the perforation showed an inflammatory lesion, but around the margin of a rather large ulcer there was distinct cancer. The patient died from recurrence about three years later. It is hardly reasonable to suppose that this patient, as young as he was, with a fairly malignant type of cancer, could have had cancer of the stomach for eight years, especially when there were early clinical symptoms of typical hunger pains, with intermittent attacks of nausea and vomiting, and later continuous pain in the epigastrium.

That gastric peptic ulcer must be regarded as at least an occasional starting point of cancer seems to be obvious, whereas from peptic ulcer of the duodenum cancer almost never arises.

A second source of cancer of the stomach is benign tumors. This is acquiring increasing interest. Miller, Eliason and Wright (Miller, T. G., Eliason, E. L., and Wright, V. W. M.: Carcinomatous Degeneration of Polyp of the Stomach—Report of Eight Personal Cases, With a Review of Twenty-Four Recorded by Others, *Arch. Int. Med.*, 46:841, November, 1930) reported from their own personal experience eight cases of apparently benign gastric polyps in which there was carcinomatous degeneration. They found that in 35 per cent of all the gastric polyps they studied there was cancerous degeneration at the base of the polyp.

Benedict and Allen (Benedict, Edward B., and Allen, Arthur W.: Adenomatous Polypi of the Stomach, With Special Reference to Malignant Degeneration, *Surg., Gynec. and Obstet.*, 58:79-84, January, 1934), of Boston, in a recent interesting article on "Adenomatous Polypi of the Stomach," reviewed briefly the literature on this subject, and reported seventeen cases of gastric polyps at the Massachusetts General Hospital which gave symptoms severe enough to demand operation. Of these seventeen polyps, seven showed evidence of malignant degeneration, giving a percentage of 41.2 per cent of malignancy in those supposedly benign tumors of the stomach in which the symptoms were sufficiently manifest to indicate surgical removal. They find that gastric analysis in these cases usually shows a rather low acidity or even achlorhydria, and they conclude that in view of the high incidence of malignancy and the tendency to hemorrhage, radical surgery should be considered in all gastric polyps. One of the most interesting features in this article, however, which will be discussed later, is the casual remark that "There are also records of nineteen cases of gastric polypi in which the polyps were not suspected clinically but were found incidentally at autopsy," and "There was no suspicion of malignancy in the microscopic appearance of the polyps found incidentally at autopsy."

It seems probable, then, that whatever conditions tend to cause gastric ulcer or gastric polyps or benign tumors would indirectly be the cause of cancer, and the symptoms and treatment of these two conditions should be carefully noted.

Peptic Ulcers

Undoubtedly duodenal peptic ulcers should have medical treatment indefinitely, unless, of course, there is perforation or marked obstruction, or recurrent bleeding, or unless the symptoms persist in spite of careful medical treatment. Here there is practically no danger of any malignant degeneration, though, as a pathological rarity, it does occur. In gastric peptic ulcer, however, where there is a danger of cancerous change, the results of medical treatment should be carefully checked. If the patient does not improve clinically and the ulcer does not heal as shown by roentgenologic examination after three or four weeks of the medical treatment, I think operation should be done, preferably a type of the Billroth I partial gastrectomy. If, however, both roentgenologically and symptomatically, the patient is improving, the medical treatment may be kept up indefinitely, but the patient should be under observation as there is a marked tendency for recurrence of these ulcers and there may be development of cancer even in the scar of a healed ulcer. This view is more conservative than that which some of the medical gastro-enterologists hold. Thus, Gerry Morgan says: "Although gastric ulcers may and often do heal spontaneously with or without treatment, nevertheless from my own experience I am inclined to view them always as surgical cases from the outset. I take this view because a certain proportion of ulcers of the stomach which in the beginning are diagnosed as benign later prove to be carcinomatous. As yet we have no means of positively differentiating, in the early stages, the benign and the malignant type of ulceration of the stomach, and since only in the very earliest stages of gastric carcinoma is a permanent cure possible, it is important that surgical intervention should be instituted." (Morgan, Wm. Gerry: The End Results of Treatment for Peptic Ulcer, *South. M. J.*, 25:256, March, 1932.)

However, following the somewhat more conservative policy I have outlined will incur very little risk, while avoiding operation when not absolutely indicated.

Diagnosis

The treatment of cancer of the stomach, surgical excision, admits of no discussion. The important

point is to make an early diagnosis so that the malignant growth may be extirpated as soon as possible. Unfortunately, in about 70 per cent of cancers of the stomach, the disease is already well advanced when the first symptoms appear. It seems possible, however, that careful study or periodic examinations of patients may offer some new hope for an early diagnosis. The late Sir James MacKenzie always emphasized this feature of medicine, to detect the beginnings of disease, and it dominated the latter years of his professional career.

If, in those who are within the "tropic of cancer," there is anything to suggest a gastric upset which cannot be readily accounted for, an examination by a competent gastro-enterological roentgenologist should be made. We are largely dependent upon roentgenological examinations for the diagnosis of actual lesions of the stomach. Clinically, there are, of course, no pathognomonic signs of gastric cancer. Uncomplicated early cancer anywhere, except in bone, rarely causes pain. About 25 or 30 per cent of gastric cancers give histories of symptoms for many years, probably indicating some preceding lesion,—peptic ulcer or a benign tumor. It would seem that there is little excuse for neglecting a thorough roentgenologic study in this type of cases. Cancer of the stomach occurs more frequently in men than in women, though in my own experience the ratio is not so great as is often recorded. We have found somewhat more than one case of cancer in women to two in men, though frequently the ratio is placed as high as one to four. Eusterman's observation that one-third of the deaths from cancer in men and one-fifth in women are from gastric cancer is significant.

A change of gastric symptoms has been stated as an indication of cancer. The patient may have had typical hunger pains coming on with the usual regularity and relieved by food, soda or vomiting, but with a change into cancer these pains gradually become more or less constant and the relief by food or soda is not so definite. While food relief is not common in cancer of the stomach, it may appear in certain gastric cancers without any preceding history of peptic ulcer. This, however, is unusual. The gnawing or burning, or sometimes a sharper pain constant in the epigastrium, may occur as one of the first symptoms, when an already advanced lesion is often found.

Gastric analysis is to some extent suggestive, though, as has been shown by Alvarez and others, the percentage of those having low gastric acidity and even achlorhydria without marked symptoms is greater than was formerly supposed, and this percentage seems to increase with advancing years. According to Alvarez and Eusterman (Vanzant, Frances R., Alvarez, Walter C., Berkson, Joseph, and Eusterman, George B.: Changes in Gastric Acidity in Peptic Ulcer, Cholecystitis and Other Diseases Analyzed With the Help of a New and Accurate Technic, *Arch. Int. Med.,* 52:616, October, 1933) there is a distinctly lower ratio of free hydrochloric acid in gastric peptic ulcer than in duodenal peptic ulcer, and in the early stage of cancer of the stomach there may still be free hydrochloric acid.

The incidence of hemorrhage with cancer of the stomach has been greatly exaggerated. Marked hemorrhage with vomiting of blood and tarry stools occurs, according to Saltzstein and Sandweiss (Saltzstein, Harry C., and Sandweiss, David J.: The Problem of Cancer of the Stomach, *Arch. Surg.,* 21:113-127, July, 1930) in not more than 2 per cent of cases of cancer of the stomach, whereas in peptic ulcer it is found in about 18 to 20 per cent of the cases. However, blood may be more frequently detected by chemical analysis and by the "string" test.

A palpable tumor, cachexia and Virchow's glands (enlargement of the lymph nodes in the root of the neck, especially on the left side) are, of course, advanced and frequently terminal signs. However, when the cachexia is due to a large fungating mass that bleeds often, or when palpation of the tumor shows considerable mobility, operation may still offer some hope for relief, even if not for cure.

The cases in which symptoms do not appear until the gastric cancer is well advanced offer us a great problem. We have a similar condition in tumors of the brain. A large proportion of the cortex of the brain is, so far as known function is concerned, physiologically "silent." So in the stomach, approximately three-fourths of its area is physiologically "silent." It has been shown by Alvarez (Alvarez, W. C.: The Mechanics of the Digestive Tract, ed. 2, New York, Paul B. Hoeber), Klein (Klein, Eugene: Gastric Motility: I. The Origin and Character of Gastric Peristalsis, *Arch. Surg.,*

12:571-582, February, 1926. Gastric Motility: II. The Conduction of the Gastric Peristaltic Wave, *Arch. Surg.*, 12:583-590, February, 1926) and others that peristalsis, instead of beginning about the middle of the body of the stomach, as was formerly held, where it can be demonstrated roentgenologically, originates near the esophagus along the lesser curvature, where the tissue acts as neuro-muscular tissue, similar to the sino-auricular node of the heart. Alvarez has demonstrated that with the abdomen of an animal opened, under a warm bath little ripples begin in the upper portion of the lesser curvature and proceed to about the middle of the body of the stomach, where they become for the first time roentgenologically obvious. There are doubtless other such centers along the lesser curvature. At the pylorus the activity of the pyloric sphincter and the pyloric canal, its adjuvant sphincter, is marked, and obstruction here produces symptoms quickly. About 80 per cent of all of gastric symptoms are caused by interference with the motor mechanism.

In the rest of the stomach, then, which comprises most of the fundus and most of the greater curvature, and much of both walls of the stomach, a lesion which does not bleed or perforate or obstruct, gives no symptoms, just as a lesion in a "silent" area of the brain gives no symptoms. It is here that a polyp or an ulcer may exist without symptoms until malignant change sets in and the growth becomes rapid and extensive.

The significance of the nineteen cases of gastric polyps reported by Benedict and Allen, as found at necropsies without previous symptoms and histologically benign, is apparent. It seems reasonably probable that if only the benign ulcers giving clinical symptoms are operated upon, there must be a great many of these lesions without symptoms that persist throughout life and are merely discovered accidentally or during a thorough necropsy. In other words, the potential source of cancer is there, and attention is only called to it when there is obstruction at the pylorus, bleeding, perforation, or a sudden growth from malignant degeneration. A careful search of the stomach in every necropsy, no matter what the cause of death, would probably reveal many of these lesions which caused no symptoms during life. Many perforations supposed to be of peptic ulcer are due to cancer. A large proportion of deaths from cancer of the stomach is from peritonitis. Dr. Margaret Warwick (Warwick, Margaret: Analysis of One Hundred and Seventy-Six Cases of Carcinoma of the Stomach Submitted to Autopsy, *Ann. Surg.*, 38:216-226, August, 1928), in an analysis of 176 necropsies on patients who died from gastric cancer, found that in about 22 per cent of these cases death was caused by perforation of the cancer. She also demonstrated that 40 of the cases (23 per cent) at necropsy showed the cancerous lesion confined solely to the stomach. Doubtless in some instances the growth was inaccessible, but the majority of cases of gastric cancer occur in the body or the pyloric portion where they can be removed.

TREATMENT

Saltzstein and Sandweiss (Saltzstein, Harry C., and Sandweiss, David J.: The Problem of Cancer of the Stomach, *Arch. Surg.*, 21:113-127, July, 1930) found, in a study of necropsies of 365 deaths from cancer of the stomach, that in only twenty-eight cases had the cancer been resected, constituting 7.7 per cent of the total cases. When we compare these findings with statistics showing that about 23 per cent of all cases of gastric cancer die with the lesion limited to the stomach, and yet that in only 7.7 per cent of the cases have the cancers been resected, it is perfectly obvious that we are missing very many chances for potential cures. We can probably balance those cases confined to the stomach that are inaccessible by the fact that at death the lesion would naturally be more extensive than it would have been a few months earlier, and consequently a larger number might have been resectable.

During a period of four months last year I did an exploratory operation upon four patients with inoperable cancer of the stomach. In one of these patients there had been obvious gastric symptoms for eight years. He had been treated by several physicians and was told that he probably had a gastric ulcer. Only a few days before I saw him there was a severe hemorrhage (unusual in gastric cancer); he sent for another physician, who had a roentgenologic examination made which showed an advanced lesion of the stomach. On exploration the cancer involved much of the stomach and the surrounding tissues. Another patient had gastric

symptoms for four years. Roentgenologic examination shortly before entering the hospital showed an advanced lesion of the stomach. At exploratory operation the lesion was utterly inoperable. Two of these four patients, then, had been treated medically without a roentgenologic examination for a period of four to eight years. It seems highly probable that a roentgenologic examination made even a year or two before the patient entered the hospital would have given some hope of cure by an earlier diagnosis and resection.

The only treatment for gastric cancer is excision, and the sooner the better. However, in some cases even when the disease appears advanced, an excision may be done with much benefit to the patient. In my opinion, gastro-enterostomy has but little, if any, place in the treatment of cancer of the stomach.

Most cancers of the stomach are relatively radioresistant, and the presence of the pancreas behind the stomach and the liver in front causes a situation which would make it difficult to give sufficient radiation to be beneficial without injuring these two important organs. However, lymphosarcoma of the stomach, which is occasionally found, is peculiarly susceptible to radiation, and this may be cautiously administered either as a primary procedure or postoperatively. A few cases have been reported in which a gastric lymphosarcoma seems to have been permanently benefited by radiation. There are some slow-growing types of cancer of the stomach, chiefly of the mucoid or so-called colloid type, in which the cancer, though extensive, may be resectable and a partial gastrectomy will give the patient some months or years of comfort if not complete cure. Of course, when lymph nodes in the neck are palpated, nothing can be done, but otherwise, unless the disease is extremely advanced, every case of gastric cancer should have at least an exploratory operation under local anesthesia to determine whether the growth is resectable.

Before operation in any known case of cancer of the stomach, it is well to give freely hydrochloric acid, about 0.25 to 0.50 per cent solution. This can be sweetened if desired. The administration of hydrochloric acid in this manner has a markedly antiseptic effect upon the interior of the stomach and upper duodenum. In many cases of fungating cancer numerous bacteria accumulate about the ulcer and this natural physiologic antiseptic decreases very markedly the danger from sepsis.

As to the type of operation, naturally we must make the technic fit the condition, but in most cases the modification of the Billroth I type, which I have fully described elsewhere and which I have been using for ten years, is satisfactory. The main features of this operation consist in joining the upper curvature of the stomach, the physiologically active part, to the upper border of the duodenum, flaring open the duodenum to avoid constriction. The cardiac end of the stomach is mobilized. This will often accomplish relief of tension and approximation of the stomach and duodenum when it would otherwise seem impossible. When this cannot be done, some modification of the Billroth II type of partial gastrectomy, preferably the Hofmeister operation, seems best. The Hofmeister technic offers advantages over the Polya in that the upper stump of the stomach is closed and a very long loop of jejunum is not demanded. In fact, the jejunum can often be approximated to the lower portion of the stump of the stomach, as in a gastro-enterostomy, with a lessened chance of obstruction or a lessened need of entero-anastomosis. Care must be taken, however, not to close the upper stump of the stomach in such a way as to make a snout of the lower end and thus prevent ready emptying. An additional excision of the tissues along the greater curvature may be necessary.

If metastases, even to the liver, are not too extensive, and the obstruction of the pyloric portion of the stomach is marked, a partial gastrectomy is often justifiable. By carrying out the technic of the modification of the Billroth I under local anesthesia, following somewhat the anesthesia of Finsterer, the danger from the anesthetic is greatly diminished, and the relief of obstruction and the removal of a septic mass afford far more relief than would a gastro-enterostomy, with but slightly increased death rate.

When the cancer involves the cardiac portion of the stomach, a total gastrectomy should be considered. While, of course, such an operation is formidable, many of the technical difficulties have been smoothed out. One of the great dangers is infection because of regurgitation from the esophagus when it is incised. This feature can be avoided by placing into the stomach a tube connected with a

suction apparatus, as first suggested by Devine, of Australia. A large soft rubber catheter or a small rectal tube is inserted through a small incision in the stomach at a point where malignancy is not present, and fastened with a purse-string suture which, after being tied, also transfixes the tube. The tube is then connected at intervals with a suction apparatus and the stomach is thus kept empty. The stomach is severed at the duodenum and separated from the surrounding tissue up to the esophagus. An important point in technic introduced by Moynihan is helpful at this point. A loop of jejunum is chosen and care should be taken to see that the loop is ample. It is brought up and sutured to the posterior surface of the esophagus, while the stomach is pulled down and lifted up over the chest as a handle to the esophagus, thus making the esophagus much more accessible. After the first row of sutures has been placed, the jejunum is opened and an incision is made in the esophagus, the suction apparatus being applied vigorously to the tube in the stomach before doing this, and afterwards to the incised esophagus and jejunum. A continuous suture unites the upper margin of the wound in the esophagus to the wound in the jejunum, and the incision in the esophagus is carried around its anterior surface. The inner row of sutures is continued anteriorly, then the first row of sutures is taken up and completed as in gastro-enterostomy. Additional sutures are inserted.

In spite of care in these cases, however, there may be some sepsis, and I think it wise to place a drainage tube, preferably through a stab wound, to a point near the site of the anastomosis. I have lost a case of total gastrectomy from neglecting to follow this precaution.

An entero-anastomosis should be made between the two limbs of the loop of jejunum which, as I have said, should be ample. It will probably be better to place them in front of the colon than behind, though much, of course, depends upon the local conditions. In addition, a jejunostomy is made farther down for the purposes of feeding.

We have, then, operations that are applicable for cancer of any portion of the stomach: partial gastrectomy, either by a modification of the Billroth I or a modification of the Billroth II, or a total gastrectomy. If the case can be secured sufficiently early to justify these operations, cure may be expected in many cases; or, in some types of cancer of the stomach even when there is slight metastasis, if relief of obstruction can be secured much comfort can be given the patient. It must be remembered that, while we cannot give immortality, if we can add to a mature life a few months or years of comfort and usefulness, it is an ideal not to be scorned, even though there may not be absolute cure from the disease.

ENDOMETRIOSIS WITH REFERENCE TO INTESTINAL IMPLANTATION.*

WILLIAM H. GOODWIN, M. D.,
University, Va.

An endometrioma is a benign tumor composed of misplaced tissues identical with the uterine or tubal mucosa. These tumors appear as puckered, bluish invasions with marked tendency to the formation of cysts containing a chocolate colored material due to old and recent menstrual bleeding.

Since these tumors are usually multiple the condition is spoken of as endometriosis just as one speaks of miliary carcinomatosis when there is widespread peritoneal invasion from a carcinoma of the ovary or some other pelvic or abdominal organ.

Endometriomas are most often found in the ovaries as small implantations, or the whole ovary may be invaded or converted into cysts of various sizes but never very large. See Figure 1. These cysts are usually densely adherent to the surrounding structures and rupture very easily, causing disseminated endometriosis in many instances as a result of viable endometrial cells becoming engrafted upon the surface of neighboring structures.

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These endometriomas, often called adenomyomas, may arise from the uterine or tubal mucosa, invading the uterus or tubes from the mucosal surface, but more often they originate from implants on the serosa. Endometriomas are also found on the round ligaments, involving either the intra- or extra-peritoneal portion, or the pelvic peritoneum, the broad ligaments, the bladder wall, the appendix or loops of either small or large intestine. Next to the ovary in frequency they are found invading the recto-vaginal septum. Endometriomas have been found in the cicatrices of abdominal incisions after Caesarian section or gynecological operations, presumably from viable endometrium being carried by the surgeon's hands or instruments. I have seen a case in which the implanted tumor enlarged, became painful and tender and discharged blood during each menstrual period.

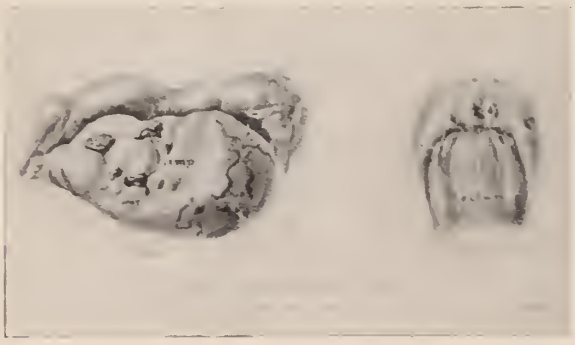


Fig. 1.—Endometrial implants of rectovaginal septum and ovary. (*After J. A. Sampson.*)

Endometrial tumors have been described in the region of the umbilicus and I have seen a case of such a tumor associated with extensive pelvic endometriosis. I have also seen a case of extensive pelvic endometriosis in which an implant was found invading the left ureter, producing a mild hydroureter. In addition to the other necessary pelvic surgery this implant was excised and a ureteral fistula resulted. This healed, however, but ureteral dilatations were later necessary for a stricture.

Adenomyoma and Müllerianoma are terms that have been used synonymously with endometrioma. The latter term suggests an embryological origin which is objected to by most students of this subject. The term, endometrioma, as applied by Sampson, seems most applicable to describe the condition under discussion. As to the exact origin of endometriosis there is still much debate.

The theory of Sampson, I am sure, is the most widely accepted one, and explains the condition as due to a back flow through or from the fallopian tubes, of menstrual blood containing viable cells. These cells become engrafted upon one or both ovaries which act as hot-beds for rapid development.

These cells may grow on any other pelvic structure and often they fall by gravity to the cul-de-sac of Douglas and flourish on the rectovaginal septum. These implants act as miniature uteri and participate in the menstrual function just as the normal uterus does except there is no escape for the menstrual blood, and hence greater distention occurs each month of menstrual life. Consequently, these tumors slowly increase in size, become cystic and finally rupture under tension, giving rise in many instances to secondary implants. During this process there is produced chronic inflammation, dense adhesions and further invasions of adjacent structures.

There are other hypotheses offered to explain endometriosis and Sampson does not maintain that his theory will explain the origin of all endometriomas. Misplaced embryonic rests of Müllerian tissue may be responsible for some extra-peritoneal endometriomas or the viable endometrial tissue may be carried to extra-peritoneal regions by the blood or lymph stream and start up activity. It has been held that inflammation may cause a metaplasia of the peritoneum or germinal epithelium, resulting in endometriosis.

A mesothelial origin from the Wolffian body is possible, and Novak is quite convincing in his theory that endometriomas are derived from celomic epithelium. Whatever may be the truth concerning the origin of endometriosis, the condition presents a clinical problem which may have serious consequences.

I am sure this condition is frequently unrecognized and finally recorded as adherent, hemorrhagic ovarian cysts, or chronic pelvic inflammatory disease. In many instances the pathological process very closely simulates malignancy and the surgeon must be familiar with the condition in order to render proper service to his patient. On one occasion, during abdominal exploration, I found an indurated, infiltrating mass in the rectovaginal septum. Previous to operation this mass was thought to be inflammatory. There were noted, however, puckering and dark blue spots on the surface of

the mass. Carcinoma of the rectum was thought of, but an associate reported that on digital examination of the rectum the mucosa was intact. A biopsy was done and a quick section examination was reported as adenocarcinoma. The tumor resembled so much an endometrioma and fearing that the pathologist was not furnished with adequate tissue, a larger piece was excised, making sure that one of the blue nodules was included, and the pathologist then had no difficulty in making a diagnosis of endometrioma.

Endometriosis always occurs during the childbearing period of life and the incidence is highest between thirty years of age and the menopause. Either absolute or acquired sterility is usually conspicuous. Dysmenorrhea of the acquired type is almost constantly observed. The pain is of a grinding, boring type, and frequently between periods there are attacks of severe pelvic pain which no doubt are due to the rupture of cysts.

Fibromyoma and retrodisplacement of the uterus are frequently associated with endometriosis and are quite possibly etiological factors. Pelvic inflammatory disease is often present and may be an etiological factor or a result of endometriosis. Rarely malignant endometrial tissue may be engrafted on the pelvic viscera or benign endometrioma may undergo malignant change. When an endometrioma forms on a segment of bowel there will eventually ensue evidence of chronic or sometimes acute intestinal obstruction.

Involvement of the rectovaginal septum is usually present in cases of endometriosis and painful defecation is frequently a complaint. I have under observation a patient who complains of painful defecation which is much worse during her menstrual periods. There are tender, hard, firmly fixed nodules palpable in the cul-de-sac through the posterior vaginal vault. This patient also complains of dyspareunia. I believe this is an early endometriosis of the rectovaginal septum with symptoms too mild at this time to warrant any more than palliative treatment.

It is rare that a diagnosis of endometriosis is made previous to laparotomy, but the abdominal and pelvic surgeon should be constantly aware of this condition and with the above-mentioned symptoms and signs he should at least suspect the disease and verify his suspicion by microscopic study of frozen sections. The presence of hard, painful, fixed nodules in the cul-de-sac is quite suggestive of endometrial implants, and, with the vaginal speculum in place, these nodules often have a dark blue color, due to the presence of menstrual blood, which I think is pathognomonic.

With evidence of intestinal blockage we should avail ourselves of X-ray and proctosigmoidoscopic investigation. Unlike carcinoma, the mucosa of the rectum or sigmoid is intact, but the endometrioma may protrude into the lumen like a polyp.

I would like to briefly present two cases of endometriosis with intestinal implantations; one of the terminal ileum, and the other of the sigmoid. I have rarely seen endometriosis that did not involve the rectovaginal septum, and I will not mention the process further than to say some unnecessary, mutilating operations have been done under the false impression of malignancy. On the other hand, the false diagnosis of inoperable malignancy has prompted the surgeon to do nothing and he gives the patient and family a hopeless prognosis. She continues to suffer until the menopause withdraws the ovarian stimulus to the endometrial implants and she begins to enjoy good health instead of dying with cancer.

Possibly the surgeon would advise deep X-ray therapy as a placebo and with the cessation of ovarian function the patient would be gradually restored to health, thereby crediting radiotherapy with the cure of a hopeless pelvic carcinoma.

Case 1. Mrs. J. E. S., History No. 82,297. This patient, forty-eight years of age, was referred to me for the first time in June, 1932, because of abnormal uterine bleeding, frequency of urination and a slight incontinence of urine. In 1907 she had an appendicectomy, and in 1910 a round ligament suspension was done for pelvic discomfort and backache. Several small fibroids were removed and a small ovarian cyst was excised. These operations were not done in our institution and I, therefore, have no knowledge of the pathology of the ovarian cyst.

About ten years previous to her consulting me, she began having abdominal cramps which were at first noticed only at the menstrual period. Later these occurred between periods but were always more severe during her menses. During these attacks there was abdominal distention but rarely nausea and vomiting. Her family physician suspected gall-bladder disease and two years ago a

cholecystogram was made which showed a normally functioning gall-bladder.

Examination revealed a fibroid tumor of the uterus which could account for her uterine bleeding. There was also found a tender, fixed mass in the right side of the pelvis which seemed to be unattached to the uterus. A laparotomy was done and the diagnosis of uterine fibroid verified. In addition, however, the right tube was occluded at the fimbriated extremity by intimate attachment to the right ovary. The tube was much distended and filled with chocolate colored blood. The right ovary showed extensive endometrial implantations and was intensely adherent to the pelvic floor and broad ligament. See Figures 2 and 3.



Fig. 2.—Photomicrograph of fallopian tube showing thickening of rugae and round cell infiltrations. A superficial endometrium can be seen on the serosal wall.

The terminal ileum was adherent to the right ovary and on separating these structures an endometrioma was found invading the wall of the bowel and greatly reducing the caliber of its lumen. The left ovary showed chronic inflammation and cystic degeneration.

The operation consisted of hysteromyomectomy and bilateral salpingo-oöphorectomy.

The patient has recently been seen and, except for mild menopausal symptoms, she has been in excellent health for the past year.

Case 2. Mrs. R. K. G., History No. 104,959. This patient is forty years of age and consulted me concerning a mass which filled the lower left quadrant of the abdomen and caused great discomfort. She is slightly anemic but has had fairly good health until seven months ago when she had a severe attack of low abdominal and pelvic pain. This attack just preceded a menstrual period and I believe it was due to the rupture of a chocolate cyst of the left ovary. The patient has dysmenorrhea for the first two days of her period, associated with mild constipation, but defecation is not painful. She has recently developed dysuria and frequency.



Fig. 3.—Photomicrograph of ovary showing chronic oöphoritis and endometrial glands surrounded by stroma.

On examination a mass could be palpated on the left side of the abdomen extending up to the umbilicus and beyond the mid-line. On bimanual examination the pelvis was found to be filled with adherent, tender cystic masses. A diagnosis of bilateral ovarian cysts was made and through a midline incision the abdomen was opened and the diagnosis was verified. The left cyst was about five inches and the right three inches in diameter. They

were densely adherent and ruptured during delivery, expelling a thick chocolate colored material.

Both ovaries were so much damaged by these cysts that bilateral oöphorectomy was done. Many endometrial implants were found in the broad ligaments and on the pelvic floor. On the anterior wall of the lower third of the sigmoid there was found a tumor about 2 cm. in diameter which was causing much narrowing of the bowel. Except for dark blue dots on the surface of the tumor it looked much like a carcinoma. A small piece of tissue was excised from this implant for a quick section and the gross diagnosis of endometrioma verified by microscopic study. See Figure 4.

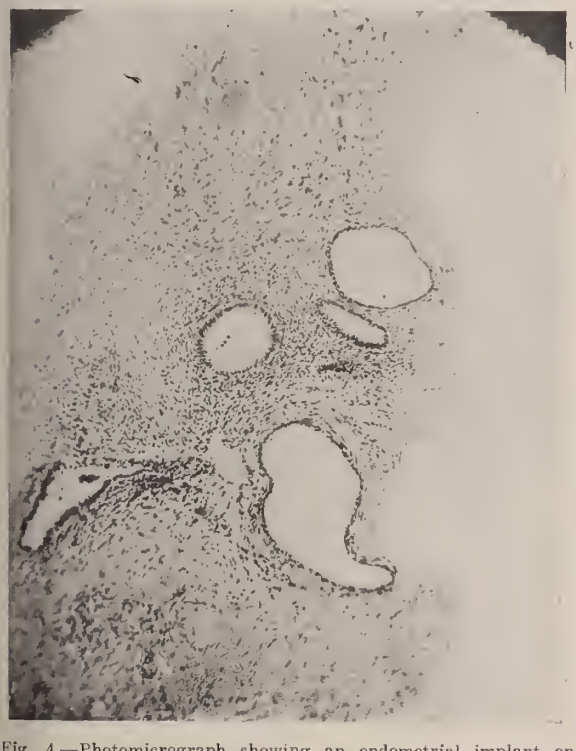


Fig. 4.—Photomicrograph showing an endometrial implant on the wall of the sigmoid.

The patient is in excellent health at the end of three months and has no menopausal symptoms.

COMMENTS

There is much uncertainty as to the true cause of endometriosis. No one theory seems to be sufficient to explain the condition in its various locations. Many small implants are symptomless and are discovered during operations for other abdominal and pelvic conditions. They may be ignored or excised. If not excised they may later give trouble.

In case one of this report there was an associated fibromyoma of the uterus causing pain, metrorrhagia and slight incontinence of urine. There was also chronic intestinal obstruction due to an endometrioma of the terminal ileum. Had this patient been younger it might have been more conservative to resect the segment of terminal ileum containing the endometrioma and leave the left ovary to function until the normal menopause.

In case two the endometrioma of the sigmoid simulated carcinoma but the quick section showed the true nature of the tumor. Both ovaries were badly damaged by endometriosis and were removed with the full expectation that the tumor of the sigmoid would slowly atrophy and virtually disappear.

I have followed some patients who had extensive endometriosis of the rectovaginal septum and six months after removal of the ovaries there remained no evidence of implants.

Should an endometrioma of the intestine cause acute obstruction, a temporary ileostomy or colostomy should be done and later a resection of the bowel, or, better, removal of all ovarian tissue. The age of the patient and extent of pelvic endometriosis should guide the surgeon in his decision. I think the formidable operation of colonic resection is rarely indicated and proctectomy never.

Inasmuch as a pre-operative diagnosis of endometriosis is rarely made except in very advanced lesions and with so great a possibility of a complicating pelvic inflammatory disease, radiotherapy is contra-indicated. However, when insignificant implants are found in the course of pelvic operation for another reason than bilateral oöphorectomy and subsequently evidence of endometriosis arises, radiotherapy could be used to stop the menstrual function with assured success.

If endometriomas have been excised and ovarian tissue left with recurrence of endometriosis, I am sure X-ray is the treatment of choice.

The prognosis of endometriosis is excellent when properly treated, and careful gross and microscopic studies should be carried out to avoid confusion with carcinoma which would lead often to an unnecessary and dangerous resection of bowel or abandonment of any surgical procedure because of apparent hopelessness.

DISCUSSION

DR. A. P. JONES, Roanoke: Every man who does abdominal surgery in the female is very much interested

in this particular subject, which Dr. Goodwin has discussed so well. Russell, in about 1899, first described a mass which he did not, at the time, call by this same name. Then Cullen came along and talked to us about adenomyomata, and, finally, Sampson has very definitely showed us the nature of this condition. The most interesting point about it is that it has primarily a menstrual origin and therefore is always found during the menstruating life of the individual. I notice that two of Dr. Goodwin's cases were forty-eight and forty-five, respectively. Two of my seven cases were in women in the thirties; therefore, the ovaries could not be removed.

One of the points I might mention is the extremely irritating nature of the discharge from these cysts and the dense adhesions which occur. The tubes, for some curious reason, are usually not tied down, as are the rest of the pelvic organs. Before the true nature of this condition was recognized there was an occasional report of a pelvic inflammatory disease in which the tubes were free—very evidently a case of this malady.

I have seen reports of cases of cystoscopy in which there were found minute, blue, so-called "huckleberry cysts" of the bladder wall. This was extension into the bladder.

I recall a woman who had had a normal menstrual history until about four months before I saw her. Then her periods became very painful, for the first time in her life, and between the periods there was some pelvic discomfort. This discomfort increased at each period. On examination a mass could be palpated. In this one instance I hazarded a pre-operative guess of endometrioma, and that proved to be true. The history seemed to me to be more nearly typical than in any other case I had ever seen.

Reder reported some cases of menstrual appendicitis, and it was only after the work of Sampson that he recognized this to be not appendicitis at all, but cases of this endometriosis.

It is a very interesting condition, and I think we should thank Dr. Goodwin for his very lucid description.

DR. J. SHELTON HORSLEY, Richmond: Dr. Goodwin, in his excellent presentation, has called attention to a condition that I think is far more common than we realized until the work of Sampson, to which he referred, classified it on a logical and pathological basis. The case history that Dr. Jones just gave is interesting. When we have a patient who is well along in menstrual life pretty satisfactorily, and suddenly, without any intervening inflammatory condition at all, she begins to have painful menstruation, that is quite suggestive of endometriosis. If we look for these cases I think we shall find a good many of them. I find them much more frequently than I formerly did.

Dr. Horsley presented a lantern slide and continued: This is a section of bowel which I resected from a woman about forty-eight years of age, who had had a fairly normal menstrual history, though backache and some symptoms indicating partial obstruction. She was quite anxious to preserve her menstrual function. She had been a widow and was recently re-married. I operated and found a small ovarian cyst. It was not a chocolate cyst and not adherent. This was removed, leaving some ovarian tissue on that side. There was a mass in the terminal sigmoid and upper rectum which felt somewhat like carcinoma. Feeling a little uncertain about it, I took a frozen section, which showed endometriosis. It completely circled the bowel and was producing obstruction, though not complete obstruction. I felt in this case complete resection should be done. I did a complete colostomy on the right side and a few days later resected the bowel. She made an uneventful recovery with preservation of ovarian function.

This slide shows the muscular coat, somewhat hypertrophied, and over it the mucosa is stretched, but there is no abrasion in the mucosa; it is perfectly normal. In this circular constricting band are these little cysts lined with columnar cells and containing menstrual blood. Even if we had destroyed the ovaries, with this thick band entirely circling the bowel, I don't think she would have obtained relief. So I did this complete resection, even though I knew at the time it was not malignant.

I have recently, too, found a case in whom an extension went over the ureter and apparently partly obstructed it. I dissected it off, after doing a complete hysterectomy, and the patient made a satisfactory recovery.

DR. STUART MICHAUX, Richmond: I shall just take opportunity to thank Dr. Goodwin for his paper and to say a few words about prophylaxis in this condition. Very little has been said about that. I think Sampson's theories have been fairly well substantiated. I don't think any theory runs true to form in every case, and it may be there is a transmission of these implants by the lymphatics, and certainly, we know, there is transmission by the large venous uterine channels. When we take into consideration that the implants are carried into the fallopian tubes and from there into the cul-de-sac, we have a fertile field, in retroversion of the uterus, for this condition. We rarely find a case of endometriosis in which there is not existing or has been existing a retroversion of the uterus. When the peristaltic wave takes place to extrude the menstrual blood, there is extrusion into the fallopian tubes and into the cul-de-sac. The uterus has inadequate drainage. Of course, we see this condition in women without retroversion of the uterus. But in a large majority of those cases the uterus rests upon these cysts; the cysts have become so large that they lift the uterus out of the cul-de-sac, and the uterus rests upon them; the uterus is in a vertical position and is then draining.

Occasionally we find a case in a woman with acute anteflexion. Here we have inadequate draining, forcing of the fluid and the endometrial cells into the cul-de-sac. If we would pay more attention to promoting proper uterine drainage in all cases of menstrual pain,

and particularly to relieving retroversion, we could prevent a great many of these cases from developing.

I should like to say a few words about the treatment in younger women. I am opposed, personally, to very radical resections of the colon, sigmoid, or cecum when an implant exists. I think a woman is far better off in having the ovarian secretion removed by bilateral oöphorectomy, because, almost invariably, when one ovary is affected with a chocolate cyst, the other one is also. Or, if not found then, it will develop in later life. She is far better off in having bilateral oöphorectomy. If she is young, balance can be maintained to a very satisfactory extent by the administration of female sex hormone intra-muscularly. This should be begun at from twelve to eighteen months after bilateral oöphorectomy has been performed. These women can be taught to give themselves an injection twice a week and kept in fairly good balance.

Dr. Goodwin talked about the rectovaginal septum. My impression is that this lies below the peritoneum and that we find most of these implants in the cul-de-sac.

Question—(DR. HORSLEY): Will not those injections have the same effect as living ovarian tissue?

Answer: Yes, but sufficient time should be given for the atrophy of the implants. Then they can be used successfully. And the patient can be taught to administer them to herself.

DR. GOODWIN, closing the discussion: I just want, very briefly, to thank those gentlemen who were so kind as to discuss my paper.

First, Dr. Jones spoke of the fact that the fallopian tubes are usually free in cases of endometriosis. I find that to be true. In the first case which I reported, however, the right tube was not free, but I believe it had been free for a considerable time and that is how she got her endometriosis, but later the fimbriated end became adherent to the right ovary and the blood backed up in the tube.

Dr. Jones also spoke of endometrial appendicitis. I have not seen an endometrial implant on an appendix. I have reported, however, a case in which a woman had an implant on the uterus and a primary carcinoma of the appendix, which is not very usual.

I was also glad to hear Dr. Horsley's views on the subject. While he resected the large bowel, I believe he was driven to that by the condition of his patient. Many of these, I believe, will get by without resection if we withdraw the ovarian stimulus. However, Dr. Judd has also reported a case, and so have other men, in which they resected the large bowel. I believe in my first case, if the patient had been a young woman, it would have been better to resect a small portion of the ileum and let her have a normal menopause.

All of the cases of endometriosis I have seen have either had a fibromyoma of the uterus or a retrodisplacement. In some the uterus has been pushed forward by the ovarian cysts. Endometriosis may be associated with acute anteflexion of the uterus.

Dr. Michaux questioned my use of the term "endometriosis of the rectovaginal septum." I have ample authority for this in the literature and prefer it to the term "endometriosis of the cul-de-sac."

Dr. Sampson, who brought this subject to our attention so forcibly, has advised against diagnostic curettage when there is a suspicion of carcinoma of the body of the uterus. I can't diagnose carcinoma of the body of the uterus without curettage. I have never seen a carcinoma of the pelvis caused by diagnostic curettage, but it is conceivable that blood containing malignant cells may be forced through the tubes and cause carcinomatosis.

THE EARLY DIAGNOSIS OF PRIMARY MALIGNANT BONE TUMORS IN EARLY LIFE.*

MARSHALL J. PAYNE, M. D., F. A. C. S.,
Staunton, Va.

It is a mistake to teach that the diagnosis of primary malignant growths in the early stage is easily made. Of all the pitfalls in the practice of the healing art none is so thinly covered, yet so perfectly concealed as the early diagnosis of primary malignant bone tumors in early life.

A great deal of harm may be done by teaching that a bone sarcoma is easily and always early diagnosed. Nothing is further from the truth. I have known of a case of giant cell sarcoma to escape diagnosis for a number of months. The diagnosis of bone sarcoma must be made with timely precision. The very nature of the malady, attended as it is by a rapid course, early and wide-spread metastases to the vital organs of the body, as for example the

*Read at the sixty-fourth annual session of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

Lantern slides were shown with this paper.

lungs, and almost unerring fatality within two years from its inception, leaves no room for temporizing measures and indecision.

The clinical instance of primary malignant bone tumors shows that about 33-1/3 per cent of all sarcomas of the human body are found in bone. It is estimated that at any moment one person to 100,000 people of the United States is affected with bone sarcoma while in England the ratio is one to 75,000.

I fear that the great majority of us have the impression that a bone sarcoma is something large, hard, ulcerated, bleeding, painful, with profound and constant body changes. This textbook description is true today in far too many instances.

Let us turn our view, so to speak, from the gross classical description of bone sarcoma to what may be termed the "cancer bud." The cancer bud is defined as the first primitive cancer cells. That is the microscopical nucleus from which the malignant bone tumor springs. It is not possible, as yet, for anyone to make an accurate, complete diagnosis of malignant bony changes in the stage of the cancer bud. The cancer bud is the stage in which the diagnosis is of most value to the patient yet most difficult for the practitioner to make. Little actual value will be gained for the patient from late diagnosis of true primary malignant bone tumors.

In the present presentation of this subject only primary malignant bone tumors, which are always sarcoma, will be dealt with.

The classification of Codman is offered as an aid to a proper understanding of this difficult and important subject.

Malignant growths of the bone occur twice as frequently as benign tumors of the bone. It is estimated that approximately 1500 cases of primary malignant bone tumors are living at this moment in the United States. At this rate the number of cases seen by the average practitioner is small and perhaps not more than one to four cases in all of his experience. My own personal experience includes four cases, two of which were seen in association with another physician. It may, therefore, be readily seen that but few of us are often forcibly reminded by the occurrence of primary malignant tumors of the bone on account of their infrequency in our daily work to keep the problem before us at all times.

Sarcomas of the bone are more common in early life. The peak of frequency is reached at about twenty years of age, and then rapidly declines until it is rather rare after forty years of age.

Carcimona of the bone is purely secondary and is always a destructive process. Carcimona of the bone is a metastatic process and in making a constructive diagnosis one should always search for a primary focus. Secondary involvement of the bone in "known carcimona cases" is expected and is looked for by the practitioner. Primary malignant tumors are often not thought of until our senses are rudely awakened by the presence of metastases. It is stated that at least 25 per cent to 50 per cent of diagnoses in primary bone sarcomata are erroneous on account of the condition being entirely overlooked or unsuspected.

It is said that the average diagnosis is not made until metastatic changes have taken place. A diagnosis of primary malignant growth of the bone after metastases is of no more importance to the patient than a diagnosis made at the autopsy. The diagnosis to be of value to the patient must embrace accurate verified determination of the site or location, the nature or type of the tumor, the extent and stage of the malignant growth, and the presence or absence of metastatic changes.

The diagnostic problems of primary bone sarcoma may be summed up as follows:

1st. Is there a bone tumor? (The following slide illustrates the presence of a bone cyst and a recurrent bone tumor following an operation. The tumor removed was not examined under the microscope.)

2nd. Is the bone tumor benign or malignant?

3rd. Is the growth single or multiple?

4th. Is the growth primary or secondary?

5th. If the growth is secondary, is it a sarcomata or is it a carcinomata?

6th. Determination or proof of the site of the bony tumor.

7th. The probable site may be overlooked (Codman).

Evidences of benign bone tumors and evidences of malignant bone tumors should be well understood.

The evidences of bone sarcoma are:

1st. Pain (nocturnal). In my experience the pain in the early stage of bone sarcoma is not

marked. The pain in the later stages is extremely severe.

2nd. Limp. The presence of a limp affecting the knee in a child or young person calls for a most careful examination of the part in order to determine the presence or absence of bony changes.

3rd. Tenderness. Local tenderness is evidence that should receive careful study.

4th. Atrophy of the muscles adjacent to the part is a rather late sign.

5th. Trauma. History of an injury should call to mind Bilroth's statement—"No trauma, no sarcoma." '

6th. The femur is affected in 52 per cent of all cases; the tibia in 20 per cent; the humerus in 9 per cent; the pelvis in 5 per cent; the skull, the inferior and superior maxillary and all other bones in 14 per cent.

7th. The seats of predilection of osteogenic and osteolytic sarcomata affecting the lower extremity are: (a) the lower end of the femur 82 per cent; (b) the upper end of the tibia 90 per cent; (c) the shaft, neck, and head of the femur 18 per cent; the shaft of the femur solely 9 per cent.

The inner aspect of the head of the tibia is the site of the growth in practically all cases involving the upper end of this bone, and, strangely enough, the left tibia is more frequently affected than the right. The explanation of the frequency of the growth in the young and in the femur and tibia is had in the fact that true ossification of these bones is found in late childhood. The femur and tibia are the last bones of the body to reach maturity of development. It is the young, immature or undeveloped cells that readily yield to the influences which cause them to take on primary malignant growth. The less differentiated the cell is from the normal, the more certain the malignancy and as a rule the greater the malignancy. It is a mistake, however, to rely solely on the microscopic appearance of the cell in order to determine and fix the grade of malignancy. The type of the malignancy is better determined by the clinical course of the disease.

There are at present 1500 cases recorded in the registry of bone sarcoma in the American College of Surgeons. Six hundred and forty-three of these cases are reported in children from one to twenty years of age, inclusive. Forty-one metastatic tumors are included in this group of 1500 cases. No true primary carcinomatous growth of the bone has been recorded in the Registry.

TUMORS OF BONE

NOMENCLATURE OF BONE TUMORS (AFTER THE CODMAN REGISTRY)

I. *Osteogenic Tumors:*
  A. *Benign:*
    1. Exostosis.
    2. Osteoma.
    3. Chondroma.
    4. Fibroma.
  B. *Malignant: (Osteogenic Sarcoma, Osteoblastic, Osteoblastoma).*
    [*Osteolytic Sarcoma, Osteoclast*]
    [42.8%].
    1. Gross anatomic types:
      a. Medullary and subperiosteal.
      b. Periosteal.
      c. Sclerosing.
      d. Telangiectatic.
    2. Undifferentiated sarcoma.
    3. Periosteal fibrosarcoma.
II. *Parosteal Sarcoma.*
III. *Giant-cell Tumor.*
IV. *Myeloma* (only true round cell).
V. *Ewing's Tumor* (probably *Endothelioma.*) [10%]
VI. *Angioma:*
  A. Benign.
  B. Malignant (angiosarcoma).
VII. *Metastatic Tumors:*
  A. Carcinoma (never primary in bone).
  B. Sarcoma.
  C. Hypernephroma.
VIII. *Osteitis Fibrosa Cystica.*
IX. *Inflammatory conditions* that may simulate tumors:
  A. *Osteoperiostitis:*
    1. Traumatic (bone callus).
    2. Syphilitic.
    3. Infectious.
  B. *Myositis ossificans.*
X. *Odontoma.*
XI. *Paget's Disease,* disease of late life
  [14% *develop bone sarcoma*]).

A copy with the added data in brackets of the Codman classification is presented for your information. In the present presentation the discussion will be limited to the exhibition of slides of the following:

Bone tumor—(two slides).

Benign giant cell tumor—X-rays (five slides).

Benign giant cell tumor—microphotographs (three slides).

Ewing's sarcoma—X-rays (five slides).

Ewing's sarcoma—microphotographs (seven slides).

Osteogenic sarcoma—X-rays (six slides).

Osteogenic sarcoma — microphotographs (six slides).

Osteolytic sarcoma—(two slides).

Osteolytic sarcoma — microphotographs (one slide).

I quote in part, from Kolodny:

According to the degree of differentiation of osteogenic sarcoma, these tumors are usually divided in two groups: Osteoblastic and osteolytic, depending upon the degree of bone production or destruction. From the material studied it is believed that there are no pure osteoblastic or pure osteolytic osteogenic sarcomata. The tendency of all cases of this class of sarcoma is to produce bone in some part of the tumor, because, as it was pointed out above, the cells of which an osteogenic sarcoma is composed are of the osteogenic variety, i. e., potential bone forming cells. An osteolytic tumor, having destroyed much of the involved bone, usually has minute foci of new formed bone sparsely scattered through the tumor, which, when the tumor is cut, give a gritty sensation. In an osteogenic osteoblastic tumor we see masses of new formed bone, casting the characteristic dense shadow in the roentgenogram, as also numerous minute foci of cellular areas without any trace of bone formation. There is, however, a decided difference in the consistency of an osteoblastic and osteolytic osteogenic sarcoma. The softness of an osteolytic ostenogenic sarcoma ranges between the firm elastic consistency of cartilage and the semi-fluid consistency of myxomatous tissue. Besides minute foci of bone, osteolytic tumors are composed of cartilage, myxomatous tissue, or fibrous tissue, or a combination of two, or all three. The consistency is dependent upon the prevalence in the tumor of any one of these tissues.

From the standpoint of the theory of "repair and growth restraint," osteolytic osteogenic sarcomata may be regarded as tumors in which the differentiation of the cellular elements has proceeded to a certain point on the long path between the primitive mesoblast and the mature osteoblast. In relation to this, two observations are interesting: "One is the osteolytic tumors are much more frequent in adults than children and adolescents; and the other is that an osteolytic osteogenic sarcoma more frequently invades the epiphysis than an osteoblastic osteogenic sarcoma. The latter fact is probably merely a result of the former—the ossified epiphyseal line in adults is not resisting to an epiphyseal invasion of a metaphyseal osteogenic sarcoma. The fact that osteolytic osteogenic sarcomata are met more frequently in the adult in whom regenerative powers of the bone are weaker than in the young seems to correspond well with the expressed idea of an osteolytic tumor being an undifferentiated osteogenic sarcoma.—Kolodny." Refer. *S. G. & Ob. Journal Supplement,* Vol. 44.

When cartilage prevails in the osteolytic form, the tissue is firm, elastic, gritty, with the grayish white, semi-translucent, milky, bluish appearance of cartilage.

The type of malignancy, whether high or low grade, is a clinical manisfestation, and we should remember this fact.

In the osteogenic sarcoma the cells are more or less differentiated forerunners of osteoblasts. This group comprises the majority of primary malignant bone tumors (Kolodny).

Kolodny thinks no sharp line can be drawn between the four types referred to in the classification adopted by the Registry Committee.

The X-ray and biopsy (a biopsy is no more than a living autopsy) may be credited with the ability to prove a diagnosis. It is essential that the new growth be first localized with the X-rays before the biopsy may be properly made. No one, I think, would have the hardihood to cut into a limb and open into the bone with the idea of finding a new growth without first having had some designation of the bony lesion by the X-rays. It is not always possible to make a final diagnosis of a malignant bony tumor in all cases by the X-rays, and it must be remembered that as yet we do not know just how early the X-rays will show primary malignant growth of the bone. It seems at this writing that it is impossible to demonstrate by the X-rays the "cancer bud."

Kolodny states that it is not always possible to make an accurate diagnosis even of the giant cell sarcoma, the curable kind. The records of the Johns Hopkins Hospital show that improvement in the results have occurred since 1921, due largely to better diagnosis. While positive findings in a biopsy is conclusive evidence, we cannot claim the biopsy to be practicable in the very early stage. It is evident that all of our means of making certain the diagnosis of malignancy in the early stages are limited.

Having made a diagnosis of some bone tumor, the next step will be the determination of the nature of the growth. Is it a benign, or is it a malignant growth?

The use of the X-ray will be required in order that we may determine the presence of a new growth of the bone in the early stage. It will not always be possible to accurately determine the nature of the growth without resort to a biopsy.

One complaining of pain or tenderness at a seat of predilection of bone sarcoma, and giving a history of some prior injury, either immediate or remote, should be subjected at once to careful X-ray studies, in order that the presence or absence of bone changes may be determined. If the X-ray studies are inconclusive as to the exact nature of the process revealed, then, and then only, the biopsy should be done under the most careful precautions, remembering always that additional trauma, even of the sharp scalpel of the surgeon, may excite metatases to the lung or elsewhere and hasten death.

Grave doubts may be entertained of a diagnosis of osteogenic osteolytic sarcoma in which cures have been reported. To date there is no record of a proven cure of osteogenic sarcoma. This is likewise true of the osteolytic sarcoma.

The radio-sensitiveness and radio-resistence of certain bone tumors may be employed as a further aid in the diagnosis. It matters not at what stage the case is first seen, most careful histories should be obtained, blood examinations made, and searching physical and X-ray examination of the affected parts and of the lungs or chest should always be made. No examination is complete without such X-rays.

The extreme and certain fatalities attending bone sarcoma in early life should stimulate our profession to a supreme effort in order that the diagnosis and treatment of this condition may be more securely established.

The type and grade of malignancy may be determined only by the clinical course. The constructive diagnosis and clinical course of benign and malignant bony growths may be summarized somewhat as follows:

The *benign* growths: A capsule is present, the joint is rarely involved except by mechanical blocking; the growth expands and displaces the bone substance slowly; ossification is in proportion to the bone growth; periosteal reaction or periosteal proliferation is not found except in case fracture occurs; the blood picture is not markedly or constantly affected; the general health is not seriously affected; no recurrence is seen following proper operation; no metatases occur; and no death directly traceable to the new growth in question is seen.

The *malignant* primary bony tumors: A capsule is absent or very indefinite; the bone cortex is early destroyed; the joint, if adjacent, is frequently involved; the bone proper is invaded and destroyed; ossification is not proportionate to the bone growth; periosteal involvement and proliferation is common; the blood may be grossly affected; the general health is rapidly and strikingly attacked; recurrence after even careful radical operations is the rule, and recurrence may occur even before the operative wound has healed—metastases to the lymphatics, other bones, to the lungs and other structures, and certain and early death ensues.

Both the constructive and the differential diagnosis must rely largely on the X-ray examination. Careful history and physical examination are absolute requisites. The final clinical differential diagnosis cannot be accurately determined without the aid of the *biopsy*. The biopsy must be carried out in a most careful manner. Dr. Bloodgood has recently made the statement that the "Pre-operative biopsy needs restudy," and that "ultimately cancer will appear as a microscopic disease in which only the "microscopic" examination will make the diagnosis, and we must prepare ourselves to meet this new requirement."

The treatment of bone sarcoma and the results attained depend entirely on the appreciation of the foregoing conclusion.

DISCUSSION

DR. WRIGHT CLARKSON, Petersburg: Dr. Payne has covered the subject well. I enjoyed his paper and I think he deserves our compliments. There are three points I would like to emphasize. One is the danger of eliciting tenderness by palpation. The fact that tumors may be made to metastasize by massaging them has been definitely established by Dr. Wood. Sometimes we are too anxious to make the diagnosis in these bone tumors and palpate them too much. Another important thing is the fact that Dr. Ewing's work indicates that metastases can be prevented, even in bone sarcoma, by preliminary irradiation. Therefore, whenever there is a fair possibility of a lesion being a new growth, it should be irradiated immediately. Finally, I wish to stress the importance of biopsy. A roentgenogram is absolutely necessary in these cases and a good roentgenologist can usually make a correct diagnosis in bone tumors, but there are many cases of error and we should not fail to examine the tissue under the microscope in every case, being prepared to do a radical operation immediately if our findings indicate this to be the proper procedure.

PROBLEMS IN TRANSURETHRAL SURGERY.*

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Over three years have elapsed since Davis[1] published a startling and almost unbelievable report of spectacular results obtained in a series of one hundred and twenty-three cases of transurethral prostatic resections. Severe criticisms from some quarters were heaped upon him, just as it is upon every pioneer in a new field. Many of those who were most skeptical are now ardent advocates of the endourethral attack of prostatic obstructions and their enthusiasm of the procedure is increasing with each presentation of the subject.

Since the early days of resection, thousands of cases have been reported by resectionists throughout the country. There is no field in surgery which has been more intensely cultivated, as evidenced by a bumper crop of prostates submitting daily to the so-called simple operation, which in some instances seem to follow an erroneous slogan of "in one day and out the next." It is unfortunate that this valuable field has been given such wide publicity as a minor procedure which can be carried out with complete safety. There is no logical reason why complications common to other surgical procedures should not arise, plus the dangers peculiar to operations along the urinary tract.

It is against all of the well established principles of surgery to instill the idea in the minds of the public, as well as the profession, that tissues, especially those of the vesical neck and urethra of the old man can be excised, incised and traumatised at will without a ripple in convalescence. Contrary to the usual discussion of this great and important subject, I am avoiding the sunny side of which all of you are familiar. While comparatively little has been said in regard to complications and mortality, information has been collected through personal conversations with resectionists and a limited number of published articles. Difficulties which have been encountered correspond very closely to my own.

It should be understood that pre-operative and post-operative care is as important in transurethral surgery as it is in prostatectomy. Even though the most meticulous care is given these old men, it is fair to assume that difficulties will arise which vary from a stormy convalescence to mortality.

In a small series of one hundred cases which have come under our care, there have been three deaths. One died ten days after operation from a general sepsis. This man's resistance was at low ebb, due to a pneumonia which he contracted six weeks previous to resection. Our second death occurred on the eleventh day after operation from a paralytic ileus. Several deaths from this complication have been reported in the literature, but no satisfactory explanation has been offered for its development. The third case died from a cerebral thrombosis five weeks after operation. This man did exceptionally well following resection and had gone to the country to rest preparatory to resuming work.

Infection to a greater or lesser degree can be expected in every case. This is not hard to understand when we consider the coagulated vesical neck and prostatic urethra offering a fertile field for bacterial growth, even in the presence of urine which was previously uninfected. Fortunately these infections rarely prove fatal, but are to be recognized as a potential source of general sepsis. In two of our cases, pyelonephritis has persisted for several months and is still giving trouble, but in fairness, it must be admitted that the condition may have existed previous to operation.

Hemorrhage at the time of operation, immediately following, and a delayed hematuria are to be reckoned with as serious complications. In two instances, hemorrhage at the time of operation has been annoying. Curiously enough, both of these patients maintained a complete erection during the entire procedure in spite of an otherwise satisfactory spinal anesthesia. Resections in these cases were extremely tedious, not only because of bleeding which consumed three-fourths of the time to control, but the difficulty of manipulating the resectoscope under such adverse conditions, made the operations somewhat laborious for the operator, and added to the urethral traumatism.

In two cases, a massive secondary hemorrhage oc-

*Read before the Southwest Virginia Medical Society, at Marion, March, 1934.

curred. Fortunately, both of these patients lived close by and were brought to the hospital without delay, following a complete blocking of the bladder by clots.

In case No. 1, hemorrhage occurred twenty days after operation and the bladder was filled with clots. After evacuating a double handful of these, spurter was located and coagulated. The hemorrhage was promptly controlled and there was no further trouble.

Case No. 2 presents many unusual features that are of sufficient interest to justify, a detailed report. This man, age fifty-six, submitted to a transurethral resection January 8, 1934, on account of frequent voiding and discomfort in the perineal region. He states that these symptoms have been present at intervals for the past ten years and are becoming more pronounced, and practically continuous. Three years ago, he had a profuse hemorrhage from the urinary tract and passed a large number of clots. Hematuria continued for several days. A cysto-urethroscopic examination, one week previous to operation, revealed a median bar hypertrophy and numerous dilated veins, involving the posterior segment of the vesical neck, floor and left lateral wall of the urethra. At operation, the median bar was completely excised along with all visible varicosities. There was very little oozing at the time of operation and immediately after. The catheter was removed on the third day and the patient returned home on the fourth. Fifteen days later, we were informed that a hemorrhage had occurred and there was considerable difficulty in voiding. On admittance to the hospital, three or four ounces of clots were evacuated from the bladder through a McCarthy panendoscope sheath. The bleeder was coagulated and a catheter strapped in place for continuous drainage. There was no appearance of blood during the next twenty-four hours and the patient was allowed to return home, with instructions to remain quiet. Twelve hours later, hemorrhage reappeared and progressed to the point of completely blocking the catheter. On re-admittance to the hospital, the bladder was found distended with clots. Over seventeen ounces of these were evacuated and numerous bleeding areas were located and sealed by coagulation. An indwelling catheter was strapped in place and allowed to remain for two weeks. During this time, there was only an occasional staining of the urine. General treatment consisted of coagulin, calcium gluconate and stypticin. In view of the fact that this man consistently ran a blood pressure of 275/160, he was kept absolutely at rest for a period of four weeks and nitroglycerin given every four hours. During his hospital stay, there were two rather copious hemorrhages from the rectum due to a single hemorrhoid. This was controlled by injection. The blood coagulation time was not estimated previous to operation; however, we were aware of the very high pressure, and it is logical to assume that the latter was largely responsible for our unhappy experience.

There is also one case of delayed hematuria, not of a serious nature, which occurred three months following operation. This was controlled by simple measures.

Epididymitis has been relatively infrequent, considering the fact that not a single case of ligation of the vas has been carried out. Only four instances of this annoying complication has interrupted a smooth convalescence. Three were unilateral and of short duration, while the other was bilateral and angry.

Phlebitis has occurred once. This is a rather disturbing complication and one which necessarily keeps the old man inactive over a longer period than is good for him, as well as prolonging hospitalization.

A case of advanced carcinoma and diabetes developed an ischiorectal abscess three months after resection. This was incised and a large amount of colonic pus evacuated. Several days later, a perineal urethral fistula developed which has persisted.

Permanent incontinence is comparatively rare, though a fair number have been reported, particularly following resection of carcinomae which have extended anterior to the verumontanum.

Two instances of partial and transitory incontinence have been a source of inconvenience to patients and a worry to me. One continued for four weeks and the other for six. Both were comfortably taken care of by the Cunningham incontinence clamp until the function of the external sphincter regained control. In both of these patients, we were sure that the external sphincter was not cut. It seems logical to explain the lack of control in these cases to a wide distention and traumatism to the cut-off muscle by instrumentation. In some instances, no doubt, this complication is due to removal of the

vesical neck prostatic plug in the presence of a sphincter which has been inactive over a long period. Exercise of this muscle by start and stop at each voiding over a period of time goes a long way toward correction. Lewis and Carroll,[2] in their article—"Prostatic Resection Without the Moonlight and Roses"—give a very comprehensive resumé of the difficulties encountered by themselves, as well as resectionists distributed over a widely diversified geographical area. Alcock,[3] Sargent[4] and others have also pointed out some dangers and difficulties involved in this work.

It is very necessary for us to recognize these dangers so that we may be better prepared to avoid them as far as possible, and when they do arise, meet them intelligently. Conservation of life and restoration of function under the most favorable conditions are the ideals sought, and with a better understanding of the pitfalls which are ever present, our mortality rate and incidents of serious complications will be gradually lessened.

It may appear that an apology should be made for reporting such a small series of cases with an attempt to give a comprehensive evaluation of difficulties which may be expected as a natural course of events in this comparatively new field of surgery. However, I do not mean to convey the idea that each small series of cases will present precisely the same picture as the one just outlined; as improvements will be made in technique, the operator will become more skilful, dangers will be more generally recognized, and candidates for resection will apply for relief in the earlier stages of prostatism.

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303 Medical Arts Bldg.

THE MANAGEMENT OF UNCONSCIOUS PATIENTS WITH SPECIAL REFERENCE TO POSTURE IN THE TREATMENT.*

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The loss of consciousness is a common effect of injury or disease of the brain, and, when more than momentary, is always a reliable indication of serious danger to the patient. It is of urgent importance to determine as promptly as possible the cause of the patient's unconsciousness, by no means a simple matter in all cases. Injury and alcoholic intoxication are often interwoven as factors in the same patient, the apoplectic may show a severe head injury, or the epileptic fit may be responsible for an intracranial hemorrhage. One must frequently rely solely upon the clinical examination of the patient in attempting to find the cause of his unconsciousness, and the lack of history in such a case renders the diagnosis more difficult. Every effort should be made to obtain from the relatives or those who accompany the patient, as careful a history as is possible. Facts considered by the relatives as of trivial significance, when properly considered, may be sufficient to explain the unconscious state.

Head injuries are the most frequent cause of loss of consciousness, and every unconscious patient without adequate explanation of his condition, who shows even a mild contusion of the scalp, should have a prompt X-ray examination of his skull as part of the study. Careful palpation of the scalp for contusion is obviously of importance. The sudden onset of extended unconsciousness, without the history

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or evidence of head injury, is usually due to an intracranial vascular accident such as apoplexy. It should be remembered in this connection that a patient with brain tumor, with slight or no history of previous cerebral impairment, may and frequently does suddenly become unconscious from hemorrhage into the tumor, or from a rapid edema of the brain—produced by the tumor itself. In young people or in those of any age with low blood pressure, abrupt unconsciousness, when not due to head injury, usually means the rupture of a congenital intracranial aneurysm or a complication of brain tumor.

Adequate treatment of the unconscious patient requires prompt diagnosis, prompt removal of the cause of the unconsciousness when this is possible, and appropriate general measures to prevent or offset complications to which the continued loss of consciousness predisposes. Disease or injury responsible for unconsciousness is often self-limited in duration. This is true of the majority of patients losing consciousness from a head injury. In such cases the unconsciousness lasts a variable time, but never deepens after the injury is received unless the lesion is a progressive one due to hemorrhage or infection. A study of the state of consciousness with a full comprehension of the degrees of its impairment, ranging as it may from light stupor or restlessness to deep coma, is the most important single study that can be made of a patient seriously injured about the head. To the observations as to the state of consciousness must be added a careful study of the temperature, pulse, respiration, condition of the pupils, weakness or paralysis of the extremities and often the measurement of the spinal fluid pressure. Such a study is a minimum requirement in the cases of prolonged unconsciousness, not known to be due to a poison or intoxication of some kind.

The general management of the patient in a long stretch of unconsciousness, regardless of the cause of the condition, must receive a very special sort of care, and in no way should the old adage, "Let sleeping dogs lie," represent the physician's attitude. The position of the unconscious patient should be frequently changed. Moving the patient from side to side not only tends to prevent hypostasis, but the handling causes deeper breathing which promotes a better ventilation of the lungs. The daily administration of CO_2 and oxygen is helpful in preventing serious pulmonary complications, and should be used as soon as there are signs indicating approaching trouble in the lungs.

The administration of water and food to the unconscious patient must be systematic and according to the body needs. Hot weather and high temperature may cause dangerous dehydration unless ample fluid is given by vein, subcutaneously, through a nasal tube or as proctoclysis. Under no circumstances should unconscious patients be given anything by mouth, and, even with returning consciousness, feeding or fluids by mouth should be most cautiously resumed. In a neurosurgical clinic a large percentage of patients are fed through a nasal tube to prevent aspiration pneumonia or lung abscess. Tube-feeding is necessary not only in unconscious patients but in all cases where the patient strangles in attempting to swallow. Paralysis of the muscles of deglutition frequently results from tumor of the cerebellum, and about the pons. Feeding by mouth in these cases is almost certain to cause pneumonia.

FEEDING

Howell's Physiology:
- 40 calories per hour per sq.-meter body surface
- Resting basal requirement—men 1,600 cal. women 1,300-1400 cal.

Calories in Certain Foods

Whole milk	20 cal. to the ounce
Orange juice	12 cal. to the ounce
One egg	80 cal. to the ounce
Sugar	120 cal. to the ounce
20% cream	60 cal. to the ounce

One Feeding

Milk—15 oz.	300 cal.
Orange juice—15 oz.	180 cal.
One egg	80 cal.
Sugar—1 oz.	120 cal.
	680 cal. per feeding.

3 feedings—2040 cal.

Men have a basal food requirement of about 1600 calories per day. Women about 1400. We usually give to the unconscious patient through a nasal tube, about 2000 calories in twenty-four hours, divided into three feedings eight hours apart. Feeding in this way is often less troublesome if the tube is left in the stomach and strapped to the patient's cheek with adhesive. In addition to water and food, all necessary drugs may be given through the tube, either with the feeding or separately. The improvement following administration of fluid in many unconscious patients, who have been allowed to become dehydrated, is truly remarkable. The stupor

lightens, the temperature falls, pulse rate improves and recovery sets in promptly.

The main purpose of this discussion of the general management of the unconscious patient is to call attention to some of the disadvantages of the posture ordinarily used and to emphasize the benefits of the head-down position of the patient when edema of the lungs or other pulmonary complications appear to be developing. The favored posture of the unconscious patient, particularly after operations upon the brain or when unconsciousness is due to head injury with or without operation, has been almost universally one of elevation of the head and upper part of the body of the patient. This position has been maintained, except in shock, in almost all cases on the *theory* that the head-elevated position tends to prevent pulmonary congestion and edema—always a danger in prolonged unconsciousness. We have much to learn as to the connection between serious cerebral impairment, whether due to disease or injury, and the development of lung complications. We are inclined to believe that edema of the lungs is often a direct cerebral complication, and, while favored by an improper position of the patient, may nevertheless develop in spite of any posture that may be employed. In the treatment of unconscious patients we invariably lower the head in shock, and after the period of shock is passed, they are usually put in the head-elevated position, provided there are no signs of pulmonary complications. Should these develop, we have, during the past eighteen months, elevated the foot of the bed from five to twenty degrees, turning the patient upon his side almost face downward and removed the secretions from the pharynx by a suction apparatus. This reversal of the orthodox, head-elevated posture in these cases, has appeared to bring about results that are very remarkable. In favorable cases the temperature falls, coma to deep unconsciousness lightens and symptoms of lung involvement disappear in a few hours, the respiratory rate slows and the whole clinical picture changes rapidly for the better. It has been a matter of surprise in some of these patients to note the large amount of secretions which may be removed from the pharynx after elevation of the foot of the bed. The reason for the standard, head-elevated position in the treatment of unconscious patients, is the tendency of this position to lessen cerebral complications, to diminish intracranial hemorrhage following operation, or in cases in which there has been a spontaneous rupture of a blood vessel. Undoubtedly it is true that these benefits of the head-elevated position may be expected as long as the patient's pathology is limited to the brain. The development, however, of pulmonary complications with obstruction of the tidal air by accumulated bronchial secretions, more than offsets the benefits which would otherwise accrue from the head-up posture, and favors cyanosis which raises intracranial pressure, thus adding to the patient's difficulties. Raising the foot of the patient's bed does to a limited degree impede the action of the diaphragm and causes a certain amount of pulmonary congestion. These objections, however, are more than compensated for by the drainage from the chest which the lowering of the patient's head promotes. An obvious contraindication to a head-down position would be cardiac decompensation, asthma, and perhaps other conditions in which the patient might do better with the head elevated.

Lowering the head in unconsciousness or coma, when there are signs of lung involvement, should find a field of usefulness in many medical conditions attended by unconsciousness, and we believe in such conditions the results will be equally as gratifying as they are in the unconsciousness of neurosurgical patients. Our attention was first called to the possible benefits of the head-down position by Dr. Manfred Call, of Richmond, who was associated with us in the treatment of a severe head injury. A brief summary of the history of this important case may be of interest.

Case 1.—C. H. R., age 56, was admitted to the Stuart Circle Hospital on the service of Dr. Charles R. Robins, on August 21, 1932. The patient had sustained a severe head injury as the result of a fall several hours before admission. On admission the patient was semi-conscious and restless. The pulse rate, respiratory rate and blood pressure were within normal limits. There was a contusion over the left frontal region, ecchymosis about the left eye and bleeding from the nose. The neurological examination revealed no evidence of paralysis nor any impairment of pupillary function.

The head of the bed was elevated and a watchful course pursued. On the following day there were signs of returning consciousness. On the third day following the injury, spinal puncture revealed

a clear fluid and a spinal fluid pressure of 180 mm. of spinal fluid. Drowsiness persisted, but the patient's general physical condition remained good until the seventh day, when the temperature rose to 101 and there developed a productive cough. During the next eight days, the patient's condition grew progressively worse. Breathing became stertorous and rapid. The pulse rate ranged around 140-150, and the temperature rose to a maximum of 104.8. Examination of the chest revealed coarse, moist rales throughout both lungs. X-rays of the chest showed thickening in each hilus and partial collapse of the left lung. During this critical stage, the patient could be aroused but it was necessary that he be tube-fed.

On September 4th (fourteen days after the injury), the patient's condition seemed hopeless. He could not be aroused, respiration became labored and cyanosis appeared. Signs of pulmonary congestion were evident. At the suggestion of Dr. Manfred Call, the position of the bed was changed. The foot of the bed was elevated about eighteen inches and the head was further lowered by removing the pillow. The patient was placed first on one side and then on the other. Within a few minutes a considerable amount of mucus had collected in the naso-pharynx which was removed by means of a suction apparatus. There was immediate improvement in the patient's condition. The head-down position was maintained and on the following morning respiration was less labored and the rate had fallen to twenty-eight from thirty-four per minute. The pulse rate was 112 as compared to 140 per minute twelve hours before. Within two days the patient was mentally clear, and the chest was almost free from rales. The temperature, pulse and respiratory rate gradually fell to within normal limits, and the patient was discharged on September 25, 1932, in good condition.

Case 2.—W. B. G., age 65, was admitted to the Stuart Circle Hospital on the service of Dr. Manfred Call, on November 7, 1932. The patient was stuporous and aphasic. The general physical examination was essentially negative. The blood pressure was 180 systolic and 105 diastolic. Aside from stupor and aphasia, there was bilateral choking of the discs. Otherwise the neurological examination was negative.

Diagnosis of tumor of the left temporal lobe was made, and on November 9, 1932, a spongioblastoma involving the left temporal lobe anteriorly was subtotally extirpated. Morphin and hyoscin were given as sedatives, and the operation was performed under novocain anethesia. The operation was done with very little loss of blood and the condition of the patient on leaving the operating room was considered good. The head of the bed was elevated about eighteen inches. Later there was a slight fall in blood pressure and 1500 c.c. saline was given hypodermically. Following this, the blood pressure rose to normal and the patient could be aroused.

Twenty-four hours after the operation the patient's condition was grave. His temperature had risen to 104, pulse rate to 100, and the respiratory rate to 40. There were coarse, moist rales heard throughout both lungs, and the patient was coughing frequently. All fluids by mouth were discontinued, and instead, glucose intravenously was given. The head-up position was maintained. On the following morning the patient was profoundly unconscious, temperature 104.2, breathing labored, respiratory rate 46 and pulse rate 130. The patient was cyanotic, which was thought to be due to pulmonary congestion. The head was lowered and the foot of the bed was elevated eighteen inches. The patient was placed first on one side and then on the other. Fluid drained into the nasopharynx and was removed by means of a suction apparatus. This method of treatment was continued, and within six hours the temperature had fallen to 102, pulse had slowed to 110, and respirations to 36 per minute. The patient could be aroused, and his general condition was much improved. This treatment was still maintained and the patient's condition steadily improved, so much so that within five days his temperature was normal, and there was evidence from the physical examination of the chest, that the pulmonary congestion had cleared up. The convalescence was uneventful, and the patient was discharged on November 26, 1932, in good physical condition and with very little aphasia as a result of the operative attack on the left temporal lobe.

Case 3.—R. C., age 29, was admitted to the Memorial Hospital on February 25, 1933, within a few minutes after having been shot in the face with a shotgun. He was stuporous, but could be aroused. Examination revealed multiple perforating wounds of the face, eyelids and scalp, through which small

shot could be palpated. There was ecchymosis about both eyes and slight exophthalmos on the right. The patient's general physical condition was good. The blood pressure was 110/70, temperature 97.2, pulse rate 76, respiratory rate 18. X-ray studies revealed no evidence of skull fracture nor the presence of metallic fragments within the cranium. The wounds were chemically cleansed and 1500 units of antitetanic serum given. The head of the bed was elevated and a watchful course pursued.

There was a progressive increase in stupor, and on the second day a spinal puncture was done which showed a grossly bloody fluid and a pressure of 380 mm. spinal fluid. Three days later the puncture was repeated and at this time the pressure was 290 mm. fluid, and the spinal fluid less bloody.

After the first two days there were definite signs of improvement. He became more alert and rational. The pulse and respiratory rates were normal, but the temperature ranged around 100. On the morning of the seventh day there were signs of pulmonary congestion. The patient was cyanotic and profoundly unconscious, with an accumulation of frothy mucus in his mouth. The respiratory rate was 44, temperature 104.6, and pulse 120. The blood pressure was too low to be recorded. Coarse, moist rales were heard throughout both lungs. This change in the patient's condition had first manifested itself during the night by a steady rise of temperature, pulse and respiratory rate. Pulmonary drainage was resorted to at the peak of the critical stage. The foot of the bed was elevated eighteen inches and the patient was placed on his left side. There was an immediate accumulation of mucus in the nasopharynx which was removed by suction. Within a few minutes he was placed on his right side and more mucus drained out. This method of treatment was continued, and within an hour the patient was responsive and his respiration less labored. After six hours his temperature had fallen to 102.2, pulse to 110 and respiratory rate to 22. The head-down position was maintained, and on the following day the patient's general condition was much improved. The chest was clear except for a few scattered rales heard throughout both lungs. Continued improvement followed, and within six days his temperature was normal.

The patient was discharged from the hospital on March 5, 1933, having fully recovered from his head injury and pulmonary complication.

SUMMARY

1. The treatment of the patient unconscious from any cause, should receive special attention directed to nutrition, fluid intake and posture.

2. The patient's inability to cooperate should be offset as far as possible, to his advantage, by a more watchful care and keen observation on the part of his physician.

3. In the treatment of patients with craniocerebral lesions, elevation of the head has generally been the accepted posture. Raising the head of the patient lowers intracranial pressure and tends to prevent, or minimize intracranial bleeding. In unconscious patients, however, or those with difficulties of deglutition, the head-elevated position may favor pulmonary complications. In this type of patient, lung infections may often be avoided by sharply lowering the head of the patient, keeping the patient on his side, and removing bronchial or oral secretions by suction. Great improvement in the writer's results in such cases has been brought about by change from the head-elevated to the head-lowered position in cases following brain tumor operations, severe head trauma and apoplexy. In the absence of cardiac decompensation, the head-down position with the patient on his side may give good results in unconsciousness from many causes other than those stated above.

DISCUSSION

DR. MANFRED CALL, Richmond: Dr. Coleman's paper will probably make but a transient impression unless we can visualize the dramatic incidents at the bedside that are responsible for his selection of this particular topic for discussion.

The application of the procedure outlined was primarily in neurosurgical operative cases; but a study of the results obtained in apparently hopeless cases and a consideration of the factors operative in those cases has extended the possible range of usefulness to the vast army of unconscious patients recruited every day from many sources.

Limiting my remarks to a discussion of the value of posture as outlined, it is not to be assumed that posture, as defined in the paper, can of itself cure a disease process once established. It can, however, be assumed that its use as indicated in the cases reported does have a profound effect in the removal or prevention of secondary factors that impose immediate danger to the patient; in fact, a hazard to life, at times more urgent than the original condition.

It is more than depressing, it is tragic, to see a brain case leave the operating table in good condition after a one to four hours' seance, and after the exhibition of superior surgical technique and judgment, only to succumb to pulmonary complications after the major surgical work has been successfully accomplished; and such an unfavorable result was predicted during the post-operative course of the foregoing cases.

The most impressive findings as this post-operative condition develops are the extensive pulmonary moisture, with or without impaired resonance, varying degrees of cyanosis, elevated temperature, accelerated pulse, viscid and profuse secretion, without the initial blood findings of an acute infection. The resulting narcosis is that of slow suffocation, rather than acute asphyxia.

The mechanism of the pulmonary findings is probably of neuro-muscular origin with the consequent aspiration or direct drainage of fluids and secretions through the glottis to the trachea and bronchial tree.

This general neuro-muscular abnormality may be due to the primary brain lesion, or to a general toxic state in medical conditions. Impaired muscular control of the glottis is an active factor.

We know that the glottis is susceptible to marked variations in width; its opening is controlled by the posterior crico-arytenoid, its closure by the lateral crico-arytenoid and thyro-arytenoid (vagus). Paralysis of the recurrent laryngeal nerve results in a widely gaping glottis.

Liquid food, cerebrospinal fluid in certain traumatic cases, oral, nasal and post-nasal secretions, and even regurgitation of the esophageal and gastric secretions can readily find entrance to the lower respiratory tract under favorable conditions.

The pulmonary circulation amounts to some 1500 c.c. of blood, which is under low tension but considerable velocity, the latter increased by inspiration and decreased by expiration.

Tracheal and bronchial occlusion, according to degree, results in pulmonary blood stasis with marked dilatation of the pulmonary vessels, diminished pulmonary ventilation and impaired oxygenation of the blood. Coincident with this failure in function, the excursion of the diaphragm becomes increasingly limited and is accompanied by stasis in the splanchnic vessels.

These various factors must have a profound effect on the volume of blood returning to the right heart for oxygenation.

Together they establish a vicious circle which tends to be self-perpetuating unless one of the links in the circle can be broken.

I believe that the posture advocated by Dr. Coleman in this condition by establishing adequate drainage of accumulating tracheal and bronchial fluids, thus leading to increasingly adequate pulmonary ventilation, breaks the main link in the vicious circle, and a prompt disappearance of the sequelae contingent on this main link follows.

DR. E. G. GILL, Roanoke: I think this paper of Dr. Coleman's is a very timely one and one that should be brought before a body of general men. I do not think any one should be given general anesthesia unless the anesthetist or assistant has a suction machine and the secretions are being constantly aspirated from the naso-pharynx. It has been our practice for years to have the nurse use a suction machine to aspirate the secretions while the patient is reacting from the anesthetic. This applies not only to otolaryngology but general surgery as well. It is bad practice to send a patient back to the room and not have suction machine for aspirating secretions. Many of the cases reported as abscess or collapse of the lung are due to these secretions blocking the bronchi. Once in a while an ear, nose and throat man speaks of a case which died suddenly on the table or died just after being taken from the operating room. Had the larynx been exposed, doubtless a large amount of secretion would have been found, or a blood-clot in the larynx. We always have the laryngoscope ready, and, even with an assistant aspirating the secretion constantly, we frequently find a large clot in the larynx when we lift up the epiglottis. It is very important that these secretions be removed. I personally feel much indebted to Dr. Coleman for bringing this paper before us.

DR. COLEMAN, closing the discussion: The question has been asked as to the length of time this position should be maintained for the purpose of keeping the lungs free from accumulated secretions. We have maintained it for many days in some cases. One patient with apoplexy, after doing very well for a few days, later developed symptoms of pulmonary edema. In this case we kept the foot of the bed elevated most of the time for two weeks. Because of edema of the face and scalp resulting from the continued head-down position in this case, we occasionally lowered the foot of the bed to a level with the head. A reaccumulation of mucus in the bronchi would occur in a short time, and necessitate a return to the head-down position. In another case following the removal of an angle tumor, severe deglutition difficulties resulted. This patient was kept in the head-down position for about four weeks—almost to the time of discharge from the hospital.

I should like to emphasize a statement made in the paper, that the *head-elevated* position is the one of choice in the treatment of patients with intracranial lesions of any kind, unless there is severe shock, or pulmonary complications with obstruction to respiration from accumulated secretions. As soon as the patient shows signs of pulmonary edema, or when he is unable to rid himself of the mucus in the pharynx or bronchi, we believe that the head should be sharply lowered, and the patient turned to a lateral prone posi-

tion. With such a complication, there seems to be no position worse for an unconscious patient, than the supine position with the head elevated or on a level with the body. I should like to repeat, the head-down position in the treatment of intracranial lesions is advocated in this paper, to prevent or relieve a pulmonary complication, which is frequently the cause of a fatality in these cases.

ROENTGEN RAY AIDS IN PROSTATIC RESECTION.*

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and
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Roanoke, Va.

This paper is presented with two objects in view: First, to show a method for examination of men in the prostatic age with a minimum of pain and cost, and at the same time one that is sufficiently graphic to secure the patient's cooperation and sufficiently accurate for the attending physician to form a reliable opinion. Second, to show the pre- and post-operative condition of the prostatic urethra for correlation with the clinical results, and thus furnish a basis for study of this work. The former, usually only an air cystogram, is of primary importance to the general practitioner to whom these men first come for relief: on the other hand, a study of the prostatic urethra before and after resection interests mainly the man who is actually doing the work, and will be treated only in a general way at this time.

By postponing the cystoscopy to the time of anesthesia immediately preceding operation, we spare these men no little discomfort and some risk. It is my plan, after taking the history and a general physical examination, to make a rectal examination, and then to introduce a catheter which determines the residual and at the same time allows us to get an air cystogram before the catheter is withdrawn. This usually furnishes sufficient preliminary information to advise your patient what he has to expect.

In this group of air cystograms, the usual conditions are shown. In the normal, we have a straight, vertical catheter with concave bladder base coming barely above the symphysis. In the benign hypertrophies, the convex bladder base is seen usually above the symphysis with the catheter tilted forward; the outline of the gland is seen forcing itself through the internal sphincter or pushing the muscle ahead of it. In the small fibrous prostate, the catheter may or may not be tilted forward, and contour of bladder may not differ from the normal. A sodium iodide cystogram would show trabeculation or diverticula. The above observations are correlated with rectal examination and the character of the urine as well as the amount of residual. Stones are well shown by this method. Five of this series of thirty were malignant and the condition was recognized on rectal examination. In these five, there was a more irregular contour of the gland with the catheter going straight.

The technique of taking these pictures is to have the patient at an angle of thirty degrees with the table, and the lower knee and thigh flexed. It is important that only a small amount of air be introduced—with barely enough pressure for the patient to feel it. The air comes out when the catheter is released, which is immediately after taking the picture. This should not be compared to the tense air-filled bladder sometimes used in doing a cystotomy. A film shown of a patient after a Kelly cystoscopy shows that the bladder is left full of air after the instrument is withdrawn, and yet no fatality has been reported among the thousands of these cases. My impression is that the element of risk need not be considered.

The Roentgen ray is suggested only as an aid to the usual measures. The pre-operative urethrogram and sodium iodide cystogram are a supplement to the information given by the air cystogram, but add an unnecessary amount of manipulation and cost except in special instances. Crabtree and Brodney, of Boston, review this subject in detail and present a most instructive group of urethrograms and cystograms taken from cases done by enuclea-

*Read at the sixty-fourth annual session of the Medical Society of Virginia in Lynchburg, October 24-26, 1933.

tion. Their studies are based on antero-posterior, lateral and oblique views, including some with a bulb in the rectum. No air cystograms are taken, and the contour of the prostate is shown only by a filling defect and by the position of the bladder above the symphysis. In the post-operatives, the deep prostatic fossa is shown with a relatively small internal meatus which contrasts with our resection post-operatives, showing a wide internal meatus with a deep funnel. These are presented by him in some of the complications following enucleation.

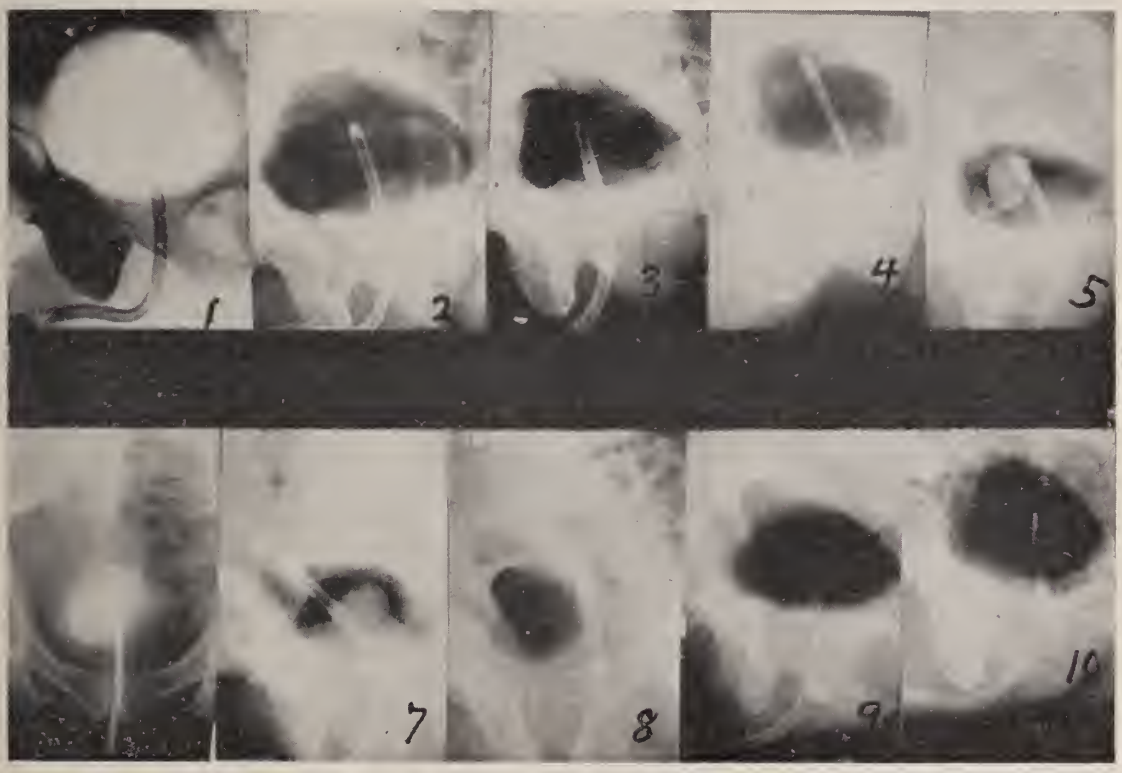


Fig. 1.—Air cystograms. No. 1. Normal. Nos. 2 to 7. Benign hypertrophies. No. 4. Residual 180 c.c. with 33 gms. removed. No. 5. Associated with stones, 100 c.c. residual, 10 gms. tissue removed. No. 6. Contracted irritable bladder shown best by sodium iodide cystogram, 23 gms. removed. No. 7. 200 c.c. residual, 24 gms. removed. No. 8. Same after resection. Nos. 9 and 10. Malignant hypertrophies.

The urethrogram deals with the actual technique of the resection and its complications. It is taken with the patient in the oblique position supported by a sandbag as for an air cystogram, using a 15 per cent sodium iodide dissolved in a mixture of equal parts of KY jelly and water. The pre-operative urethrogram, as stated before, supplements the air cystogram but is not essential. It should be taken just as the solution enters the bladder. The urethra is filled until a little of the solution is felt to go past the muscle; then the picture is taken while the injection is continued. This takes fifteen to thirty c.c. of fluid. The normal urethra is straight in the prostatic portion, with about an inch and a half between the muscles, and outlines the veru. The level bladder base is also seen. In benign hypertrophies, the urethra may show that it is flattened, is elongated and tilted forward at the internal meatus, and often shows the filling defect. In the malignant hypertrophy, it is not so likely to be tilted forward and not so elongated. Cord lesions and films taken under spinal anesthesia show a dilated internal sphincter. This appearance can easily mislead the cystoscopist who would assume that he has removed sufficient tissue.

It is in correlating our results with the clinical result that the urethrogram is of most value. That the patient can empty his bladder is not enough; there is danger of pyelonephritis as long as the urine is cloudy. The practical application of this method to resections was first called to my attention by Drs. Alcock and Flocks of the University of Iowa about four months ago. Its use has been a real help to

me, permitting a study of the condition of the urethra after resection without discomfort to the patient. Prior to this time, there had been three deaths in thirty-three cases, while in about the same number since, using the films, there were twenty-seven without a death, and then one not due to resection since no tissue was removed. Three of this number were considered inoperable elsewhere and have done well. If we are to accept practically all cases, the mortality will necessarily be high. These cases must be studied over a long period and not considered cured just because they can void. As long as there is infection in the urine, there is a risk not only of epididymitis but of sepsis. It is to interpret this post-operative condition that this study is undertaken. The illustrations show groups as follows: 1. *Those voiding in comfort within a week with little or no residual.* These show a funnel-shaped posterior urethra with the internal sphincter obliterated. 2. *Several months later.* These show a similar condition but much smoother surface. There is no indication of destruction of underlying tissue as discussed by Caulk who advocates cutting by actual cautery. Sufficient time has not yet elapsed to show the effect of scar tissue, though clinical reports have not indicated trouble from this source. 3. *Temporary leakage.* Each of these shows that the resection has gone too far forward. 4. *Unable to void after operation.* The mechanical reason can be seen in several in whom a second resection produced a good result. Two with apparently free opening are unable to void. One was ninety-one years old, and I hear has since recovered his power to void after wearing catheter for a time; the other had carried a very large residual over a long period and bladder muscle will probably regain its tone. 5. *In the malignant cases,* my impression is that relatively less tissue need be removed since the tissues are less elastic. The funnel seen under the anesthesia remains, while, in the benign cases, the relaxation tends more to give a false impression of the result.

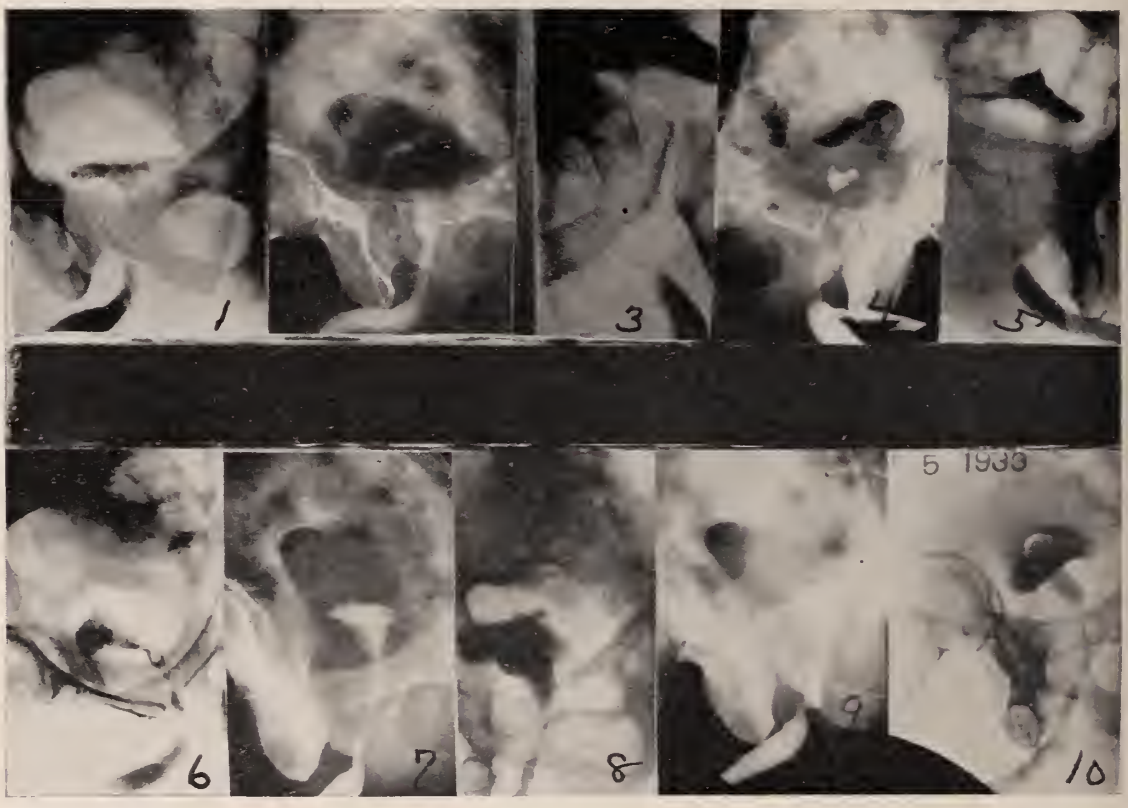


Fig. 2.—Urethrograms. No. 1. Normal. No. 2. Flattened urethra from lateral lobe pressure. No. 3. Elongated with filling defect. No. 4. Picture taken after, instead of during injection, showing the normal contracted condition of the prostatic urethra, present in all hypertrophies. No. 5. Malignant. No. 6. Cord lesion. Note relaxation of internal sphincter as occurs also under spinal anesthesia. No. 7. Funnel-shaped urethra occurring after resection, giving good result. Nos. 8 and 9. Temporary dribbling due to cutting too far forward. No. 10. Unable to void.

The following group of six cases are cited as instances of how these men may be studied in retro-

spect not only for their subsequent treatment but for a guide in others of similar type. In the first, Fig. 3, No. 1, a complete retention occurred with attacks of frequency for three years. The air cystogram shows a lobulated portion of the gland projecting posteriorly; this was also seen on cystoscopic examination at the time of resection. Ten grams was removed, allowing voiding without difficulty, but more tissue should have been removed, as shown by urethrograms before and after resection. Compare with the following three urethrograms of cases

In the following two instances, Fig. 4, there was a failure to void following resection. In the first, with 600 c.c. residual and symptoms lasting ten years, the air cystogram shows a lobe projecting posteriorly. This is seen as a filling defect in the sodium iodide cystogram. The second urethrogram, taken after the removal of fifteen grams, shows that tissue was not removed far enough forward. Cystoscopy showed also how removal of lower portion of lateral lobes allows them to close in, making a more complete obstruction. The next urethrogram, taken

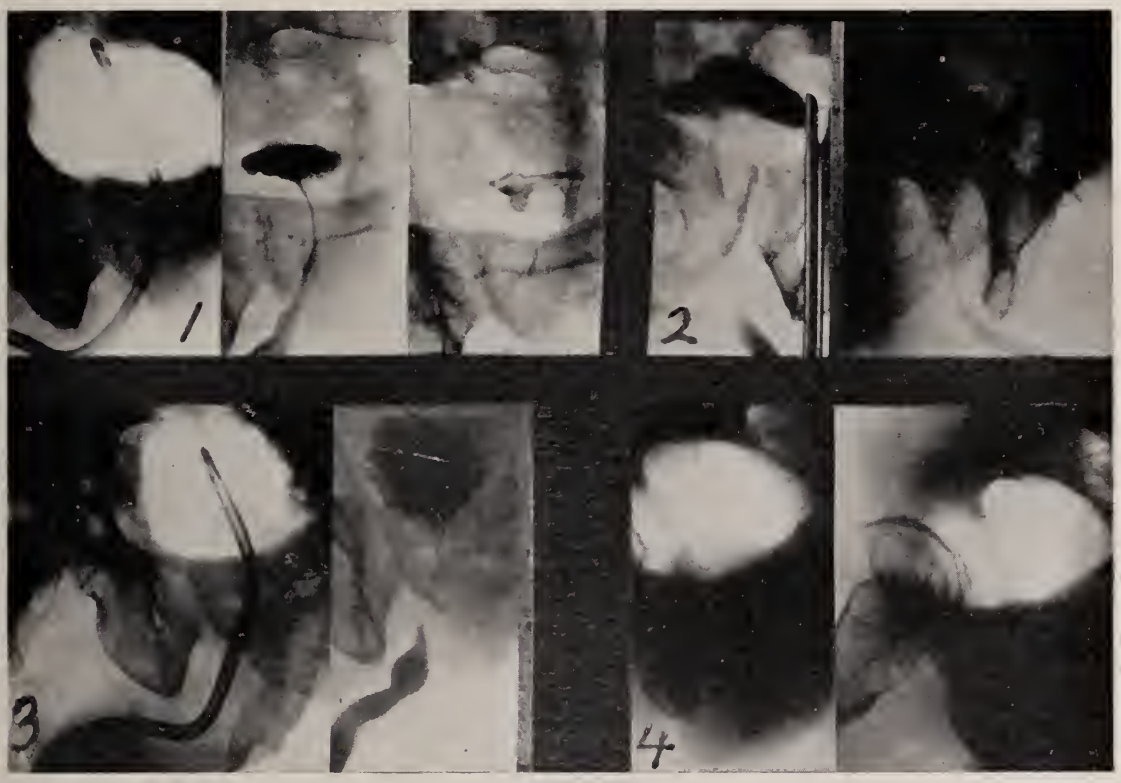


Fig. 3.—No. 1. Air cystogram showing median lobe hypertrophy. Urethrograms before and after resection. Ten grams removed. No. 2. Before and after resection, 10 grams removed. No. 3 Air cystogram before and sodium iodide cystogram after resection, 33 grams removed. No. 4. Air cystograms before and after resection of 15 grams.

healing promptly. While this patient is apparently well and satisfied and can empty his bladder, there was a delay in clearing of the urine and consequent risk of pyelonephritis. This man also developed a stricture in the anterior urethra due to using a soluble tragacanth lubricant instead of oil for the electrotome. The oil being insoluble remains and prevents friction from a tight urethra. Nos. 2, 3, and 4 gave good results, 10, 33 and 15 grams having been removed. In No. 3, there was a postoperative hemorrhage on the fifteenth day. This cleared by catheter drainage, and was the only one of consequence in sixty-four resections.

after the second resection of ten grams further forward, allowed complete emptying of the bladder. There was some dribbling on exercise, which stopped entirely after six weeks. In the second case, the urethrograms show the condition before and after each resection. There was a complete retention, relieved partially by the removal of twelve grams, and entirely by removal of sixteen additional grams one week later. This was a very poor surgical risk and may not have tolerated removal of the twenty-eight grams at one time.

It is the author's impression that a continued use of this method is necessary to secure satisfactory re-

sults not only in taking the pictures but in interpreting them. A much larger number are presented in the exhibit with a brief history attached to each. In no sense is this intended to replace cystoscopy. In fact, at the time of resection, it is my custom to view the area with a lateral and retrograde telescope before and at several times during the resection. The retrograde telescope not only shows the tumor from within the bladder but shows its shadow against the bladder wall. The fore-oblique telescope, which looks ahead and partially to the side, is, of course, the essential telescope of the instrument. An extra telescope of this type is at hand as a protection due the patient, and is useful also with a forceps attachment to pick up quickly fragments in the bladder.

In this brief experience, using the Roentgen ray routinely for only four months, observations are made but conclusions are only tentative. I feel I can state positively that any man studying his cases post-operatively by this method will do better work and, if air cystograms are taken on all men past fifty with symptoms of renal toxemia or bladder symptoms, they will find many obstructions which can be removed before permanent damage is done.



Fig. 4.—Urethrograms in two cases requiring second resection showing condition after first and after second resection.

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Medical Arts Building.

DISCUSSION

DR. WARREN W. KOONTZ, Lynchburg: Every new method of surgical procedure usually carries with it various developments in technique. So it is with the recent method of handling prostatic resection. Resection,

a few years ago, was considered an experiment. Today, with the recent developments in technique, we believe that it has become the best method of handling more than ninety per cent of our prostatic enlargements.

The paper of Drs. Butler and Peterson presents a diagnostic method which seems to eliminate several of the things that we have been trying in the diagnosing of these early prostatic cases. Most of the cases that come to us have been suffering with prostatic trouble for a number of years. They have low kidney function, have an increase in nitrogen waste products in the blood, and they are usually sick people. The improvements in technique have been to eliminate many of the things that cause shock and cause sepsis to these people who have reached the prostatic age. These complications have contributed to the high mortality found in the old methods of handling prostatic trouble. With the use of the resectoscope, the mortality of any one man's series has not to the present compared favorably to the mortality of the suprapubic method. We feel this is due to the fact that our technique has not become standardized.

Drs. Butler and Peterson have brought out one important thing; that is, what does the prostate look like from the inside of the bladder? Cystoscopy often produces right much shock. We have seen chills, fever sometimes, sepsis and even death at times following instrumentation. When a patient comes to you, one can check the residual and at the same time make the air cystogram and form a definite idea what the prostate looks like from the inside of the bladder, as though you were looking in with the cystoscope. The advantage of this, to me, over the iodide solution is that you can judge what the prostate looks like better than with a filling defect. With this you get actually what the prostatic lobes projecting into the bladder look like. You also get a fairly good estimate of the size of the prostate and of the prostatic urethra by the tilt of the catheter and how far the catheter goes before you reach the internal surface of the enlarged lobe. Of course, as Dr. Butler brought out, this is just one of the many things that must be judged and correlated with the clinical findings, the blood picture, the urinalysis, the history, and the patient's general condition.

Dr. Crabtree and Dr. Alcock have supplemented an additional examination which helps us to determine what has gone wrong in a given case. Why that case does not empty his bladder or why he does not void satisfactorily after we feel that the prostate has been sufficiently resected. The urethrogram can be supplemented to the air cystogram, but it still would not give you the same view of the internal appearance of the prostate as the air cystogram that Dr. Butler and Dr. Peterson speak of. The urethrogram, as it has been developed, can give us a fairly accurate knowledge of the amount of funneling that we have gotten at the time of the resection, and from that we can judge fairly well whether the resection has extended too far or whether it has not extended far enough. I believe Dr. Butler's and Dr. Peterson's work in this air cystogram has added more interest to a technique that probably will fit into a standard technique for the resection of the prostate.

DR. LINWOOD D. KEYSER, Roanoke: I cannot refrain from mentioning just a few things in emphasis of what Dr. Butler has brought out. Caulk started in 1920 a campaign for the transurethral removal of prostatic tissue and was resisted until about 1930, when Davis simplified the technique so as to make it applicable by the general urological profession. Many advances have been brought out in the last few years in using this method. I think this paper has brought out several of these advances, particularly from the roentgenological side. In the air cystogram, the danger of air embolism must be a minimal danger. The introduction of air under pressure, of course is to be avoided.

Urethrography is a method that might be practiced more frequently, although its routine use has not seemed to me as necessary.

The omission, of course, of the use of the sodium iodide cystogram might sometimes cause us to miss carcinoma or a diverticulum.

The urethra, as we know, is probably, after the intestinal tract, the most highly absorptive area in the body, and there is a hypothetical probability, at least, of the development of epididymitis following the procedure of urethrography. The practical point is that our chief objective is not to demonstrate the type of lesion graphically but to determine whether or not there is obstructive tissue remaining. The maintenance of infection in the urinary tract is the point that we must handle. We readily acknowledge that the introduction of the catheter will overcome obstruction at least, and the patient must then be gotten in shape for a second resection. The necessity for this occurs in about ten per cent of the cases in the hands of the better men. I can not quite see why another cystoscopy independent of that preliminary to resection would be necessary, or a urethrogram. At the same time, urethrography does bring out beautifully the portions of the prostatic gland which are offending. And from this point of view Dr. Butler's excellent work is to be commended.

DR. CLAUDE MOORE, Washington, D. C.: As a radiologist I want to congratulate Dr. Butler and Dr. Peterson upon their work. They are really examining their patients in a really worth while way, and not imagining what pathology is really present.

Some criticism has been directed because of the air injections into the bladder. Personally I have not the slightest hesitancy in putting air into the bladder. Occasionally we inject air into ureters and pelves of the kidneys to make pyelograms. Large amounts of air are being injected into the cerebrospinal space after the removal of spinal fluid followed by encephalograms and ventriculograms. This diagnostic method is now universally used in a large number of the diagnostic centers. In a personal communication, Dr. Fay, of Temple

University, said that they had had only two fatalities in nearly a thousand cases, and one of the deaths occurred in a patient with a large brain tumor.

Intravenous urography is now so universally used that much urinary pathology is discovered before the patient consults a urologist. However, in many cases retrograde pyelography is equally valuable with and without the intravenous method.

An oral method has been developed for giving the drug which should be on the market in a short time. This is comparable to the oral method of cholecystography, and the cost of the drug will be markedly reduced.

DR. BUTLER, closing the discussion: I neglected to say that Dr. Peterson intended to be here but was held up by being called as a witness in a court case and on that account is not present.

I certainly thank Dr. Koontz and Dr. Keyser and Dr. Moore for their discussion.

As regards epididymitis following these cases, I do not think a preliminary urethrogram is indicated. I did it in a few cases. But, after the resection, the fluid usually goes in without much pressure, so that the risk of epididymitis is not great. I would not advocate much pressure in these cases.

As to Dr. Moore's discussion of air in the bladder, I was much interested. I am glad to hear he feels that there is practically no danger. We know time and again a bubble of air goes into the bladder when introducing novocain.

THE IMPORTANCE OF BODY BUILD IN DETERMINING IDEAL WEIGHT.*

W. AMBROSE MCGEE, M. D.,
Richmond, Va.

The attempt to estimate the state of nutrition mathematically by height-age standards has frequently given rise to much dissatisfaction among both physicians and parents. Realizing some sort of weight table was necessary, we have continued using height-age charts in classifying nutrition. It is apparent to all that body build plus height and age should be taken in consideration when using weight charts.

Until recently there have been no simple and practical tables dealing with width measurements when attempting to place a child in its relative body build class. Lucas and Pryor[1] have given us very practical tables dealing with body build as judged by width measurements at the iliac crests. Unfortunately, in order to use the data published, quite a few mathematical maneuvers are required, thereby vitiating the great value of the Lucas-Pryor tables.

AVERAGE WIDTH AT ILIAC CRESTS

Age	*No. Cases*	*Boys*	*No. Cases*	*Girls*
1 month	11	9.50 cm.	15	9.15 cm.
2 months	18	10.23 cm.	15	9.90 cm.
3 months	15	10.83 cm.	13	10.28 cm.
4 months	14	11.14 cm.	12	10.97 cm.
5 months	17	11.39 cm.	13	11.19 cm.
6 months	33	11.88 cm.	15	11.68 cm.
9 months	40	12.40 cm.	31	12.14 cm.
1 year	27	12.79 cm.	30	12.31 cm.
1½ years	12	13.70 cm.	12	13.16 cm.
2 years	10	14.32 cm.	10	13.95 cm.
2½ years	3	14.66 cm.	3	14.33 cm.

In order to take advantage of the width measurements, which require no great amount of figuring, for the past two years I have been taking bi-iliac measurements and have found the average width figures for different ages up to two and one-half years. While it is realized average figures are not so accurate as individual ones, such a table shows at a glance whether or not the child in question is above or below the average width.

The ordinary Baldwin-Wood height-age tables are first used to determine whether or not the child in question comes up to the so-called "standard." Then, by use of ordinary obstetrical calipers, the bi-iliac width is gotten to determine how much the child is above or below the average width. If the height-age tables show the child to be below "normal" and the width measurement also show the same, then the percentage below average width can be deducted from the "normal" weight and the ideal weight can be found. Frequently this combination will show children to be "normal" when previously we had considered them below.

Just what additional help may be derived from such tables? Parents will worry less, physicians will not feel their efforts have been in vain, and infants and children will not be stuffed in order to

*Read at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

foolishly try to make St. Bernards out of Greyhounds. Children who have linear body builds have been found to tolerate fats poorly, so, by not attempting to over-feed them, their digestive tract is less apt to be upset and they are not so prone to be disgusted with foods.

The use of bi-iliac measurements gives a good index to one's body build, for that measurement is not greatly influenced by respiration or muscular movements, and that portion of our body should represent most accurately the body build.

By combining width-age measurements with height-age tables a more accurate idea is obtained of the state of nutrition of the individual. Inasmuch as most width tables require much mathematics, the average width-age tables are here presented in the hope they will help make physicians more body build minded and simplify their tasks.

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2618 Grove Avenue.

DISCUSSION

DR. L. T. ROYSTER, University: One of the great problems that the physician deals with is the state of nutrition. The "malnourished child" has become an ordinary, daily expression in American language; and nothing disconcerts a mother so much as to have a school nurse or physician tell her that her child is malnourished.

We must distinguish very sharply between the terms "malnutrition" and "under-weight"; that is, under-weight for height. For many years we had no definite criterion, and therefore numbers of tables were drawn up, notably the Baldwin-Wood table, and some doctors, and notably some pediatricians, perhaps, complicated matters a little bit further by emphasizing this state of so-called malnutrition. We must realize that all children can not be measured by the same yardstick. We are living in an age when yardsticks of one kind or another for human conduct are quite popular. But human beings just do not behave in any way according to rules. So if we complicate matters still further by tables for those not mathematically minded, such as myself, we have great difficulty in mastering this. The weight table is a useful guide, but we cannot judge of children of the same height by the same weight average. You cannot judge children of stocky build by the tall, slender type. Then there is an adult body build with the childish posture.

Now, all I want to say is this,—that some criterion must be used in order to determine whether the child is well and healthy. After all, keeping a record of the child's general increase in weight by use of the scales, if we want one single criterion by which to judge the child's health, remains the best. But we must not complicate the matter. The other thing is that we cannot judge by weight for type alone, even by body type. One has to depend upon one's own judgment. The subcutaneous turgor, the firmness of the muscles, etc., are just as important.

DR. J. B. STONE, Richmond: It is a very interesting subject that Dr. McGee has brought up, and his work is most commendable. I wish to add just a word to what Dr. Royster has said in regard to the necessity of making a complete physical examination instead of trying to size up the child simply by weight and height tables. Of course, in school examinations it is necessary to have some sort of standard to which the individual child can be compared. However, it often happens in my observation that the child who has beeen taken to the doctor because he is not well nourished, has been examined by the physician without being completely undressed. Under such conditions, a complete and thorough examination is impossible. I want to emphasize the importance of having the child stripped and going over him thoroughly before trying to size up his physical condition. In making this examination of the undressed child, defective conditions are often found which would have been over-looked if a complete examination had not been made, and if too much dependence had been placed on weight and height as the measure of health.

DR. J. S. WEITZEL, Richmond: I enjoyed Dr. McGee's paper very much. He spoke on a subject I have been greatly interested in. I feel that the average physician has been dissatisfied with the old method of judging children from their height alone, although the value of our height tables is unquestioned. They have been very valuable, but I feel that they have become what I might call antiquated and that the child's structural build should be taken into consideration. It has interested me greatly on account of stigmatizing normal children by calling them under-weight, and, consequently, lowering their morale. They feel that they are called upon to make a grade that they are not able to make, and, consequently, throwing an over-load on their digestive apparatus. In Richmond we have been conducting investigations and find that from ten to twenty per cent of children who have been called underweight or malnourished are normal when their structural build is considered. Consequently, that cuts down the average of malnutrition very materially. It relieves the parents of their fears which result when the child is said to be in a state of malnutrition. I feel this has not received the attention which it deserves, and I trust the doctors will take great interest in this matter and give it their support.

DR. MCGEE, closing the discussion: I agree with Dr. Royster that you cannot use any one yardstick for determining the state of nutrition, but in school clinics, etc., we have to have some criterion to go by. We have, of course, the Baldwin-Wood tables, and we also have the Lucas-Pryor tables. I think you should consider the factor of the muscles, etc., as Dr. Stone mentioned. I have recently been doing some school work in conjunction with Drs. Outland and Weitzel, and we found that a large percentage of so-called under-weight children are not under-weight when you consider the width measurements. The children are much happier, because they are no longer considered to be under a handicap and are allowed to take exercise which they were not previously permitted to take. The parents and children are satisfied, and the school nurse is pleased.

URETERO-SIGMOID ANASTOMOSIS.*

R. P. HAWKINS, JR., M. D.,
Clifton Forge, Va.

To transplant a duct intended to deliver the glandular output of an organ in which the pressure is low and regular, into a muscular reservoir in which the pressure is high and variable, has been one of the surgical enigmas. It is the construction of a valve in the muscular organ that makes this change possible and successful. We are all abundantly aware of the difficulties and failures in our attempts to mix anatomy, and supply physiology of a lost organ by transferring its function to another organ. Uretero-sigmoidal transplants have been reported in medical literature at prior times, but in 1910, Dr. Robert C. Coffey, of Portland, Oregon, first published his works on the submucous transplantations. This is a monumental contribution to reconstructive surgery.

In his experimental and clinical studies Dr. Coffey has developed three separate and distinct techniques for uretero-sigmoidal transplants. All three methods are practical clinically, and each application is determined by the peculiarities of the individual pathology.

In the first method of transplantation the ureter is drawn into an incision through the serous and muscular coats of the colon, and its open end is dragged through a small opening in the mucosa at the caudal end of this incision and then anchored there, thus bringing the open ureter into the intestinal lumen at the time of the original operation.

In the second method, a catheter or tube is fastened within the open end of the ureter by circumferential silk ligatures which both seal the ureter against intestinal infection and pressure, and anchor it to the catheter. After this, the catheter and ureter are passed into the intestinal lumen as in the first method. Urine is then transmitted from the upper ureter through the catheter into a receptacle outside the body. The anastomosis is completed, and the open ureter is exposed to intra-intestinal infection and pressure after the intra-intestinal end of the ureter has sloughed and the catheter is expelled. This occurs in about eight days.

In the third and last method Dr. Coffey has developed, the ureter is anchored in the caudal end of the incomplete intestinal incision, and a suture is passed around the end of the ureter and the underlying mucosa. This suture sloughs the ureter and the mucosa simultaneously and the anastomosis is completed automatically in two to four days after operation. The production of the permanent valve is the vital factor in each of these three methods of submucous transplants.

Our experience at the Chesapeake and Ohio Hospital, in uretero-sigmoid anastomosis, has been confined clinically to the catheter method, because we have felt that it was the practical and applicable method in each of our cases. A few details of this operation, as outlined by Dr. Coffey, will be emphasized.

Catheters are prepared by securing rubber cuffs with silk ligatures about twenty centimeters from the tips. The sigmoid is delivered and clamped above the point of anastomosis. A sigmoidoscope is passed by an asistant and the sigmoid and rectum are thoroughly cleansed with a weak mercurochrome solution. A strip of sterile gauze is then packed into the sigmoid up to the site of the transplantation

*Upon author's request because of lateness of the hour, read by title at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

and the scope is withdrawn. The ureters are then divided under the bladder and the catheters are inserted and anchored by the silk ligatures. One ligature is placed around the ureter just proximal to the cuff. Oblique incisions are made in the mesenteric borders of the sigmoid. This incision is made through the serosa and muscularis, exposing the mucosa. A puncture is made in the mucosa at the lower end of this incision and the gauze is brought into the opening by a small bite, and to this the distal end of the catheter is fixed. After each catheter has been so prepared, the gauze is carefully withdrawn from the rectum and the distal ends of the catheters are thereby brought to the exterior below. Traction is further continued on the individual catheters until the ureters and cuffed ends are drawn into the intestinal lumen. The wounds are closed. The right ureter is more conveniently anastomosed at a higher point on the sigmoid than is the left one. The operative field is peritonealized, a drain is placed in the pelvic cavity, and the abdominal wound is closed.

Each of the three methods of transplantation has its peculiar advantages, as well as its disadvantages. Dr. Coffey feels that the catheter method is the one of choice. In a large series of cases at the Mayo Clinic the technique of method one, in two stages, has been employed with striking results. Dr. Hugh Cabot reports a series of fourteen by this method without a fatality. The direct implantation is often necessary in children when the ureters are two small to admit suitable size catheters. The outstanding objection to this procedure is that the patient is subjected to two major operations. This is often very difficult because of the adhesions, brawniness, infection, and immobility that have necessarily arisen as a result of the first operation. With an open ureter exposed to the intra-intestinal infection and back pressure encountered in its new environment, the respective kidney may become blocked temporarily, and impaired in its function. For this reason a simultaneous bilateral open transplant is hazardous. Time must elapse to allow the involved kidney and ureter to adjust themselves to the new impositions.

The catheter method enables us to reset both ureters simultaneously. This operation is especially applicable in patients with malignancies, tuberculosis, or intractable infections of the bladder, or in those with dilated ureters, and in those with unilateral kidneys. Both ureters are kept open and the kidneys drain continuously while the ureters and sigmoid are sealing themselves in a permanent union. Back pressure and infection from the bowel are prevented. Complications with this method are reported. The catheters may become blocked by precipitation, especially with an alkaline urine. Keeping urine acid, and gently irrigating catheters, will often prevent and correct this. A further complication lies in the fact that the pressure of the catheters may slough the ureters.

In the last method, as in the first, a two-stage operation is essential. The ureter is temporarily completely blocked, rendering that kidney inactive for two or three days, or until the anastomosis is established by the slough of the ureteral end and the sigmoidal mucosa. This third type of anastomosis is a sterile procedure, in contrast to the peritoneal soiling that must occur in the first two methods outlined.

The following is a brief summary of the three cases of ureteral transplants in our series:

Number one was an exstrophy in a boy of eleven years. This child had twin ureters on the right side. The two right ureters were implanted in a single incision in the sigmoid. The left ureter became blocked temporarily on two occasions. Boric acid irrigations relieved this. His post-operative course was uneventful. There was a normal bowel movement on the fourth post-operative day. Catheters came away on the ninth post-operative day. He left the hospital nineteen days after operation. He returned one month later for extirpation of the bladder. At this time he could enjoy an uninterrupted night's rest.

Case number two was a negro man with multiple, perineal, and urethral, urinary sinuses of seven years' duration. He had not voided by the normal route during this time. This patient's post-operative course was uneventful except for a badly infected abdominal wound. Catheters came away in eight days. Two months after discharge he was holding the urine comfortably for six to eight hours. All sinuses had healed.

Case number three was a surgical catastrophe. The patient was a man thirty-six years old in good general health, except that he voided every ten minutes night and day. This had persisted for two years. In 1917 he had a left nephrectomy for tu-

berculosis of this kidney. Urine on admission was negative for tuberculosis. His bladder was practically obliterated. The right ureter was transplanted by the catheter method. The procedure was prolonged and tedious. He ran a very septic post-operative course. The kidney functioned perfectly. He died on the eighth post-operative day of pelvic hemorrhage and peritonitis. At autopsy the uretero-sigmoidal anastomosis was intact.

In conclusion, I wish to emphasize the broad application that uretero-sigmoidal anastomosis may have. It is a procedure of great magnitude, but it makes it possible for us to restore to comfort many miserable people who spend their entire time trying to care for their urinary discharges. Patients with tuberculosis, or cancer, or crippling persistent infections of their bladders, contracted bladders, intractable vesicovaginal fistulae, urinary sinuses, and those with congenital bladder anomalies, would welcome a man-made cloaca.

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BLOOD SEDIMENTATION IN PULMONARY DISEASE.*

EDGAR C. HARPER, M. D.
and
T. S. JENNINGS, M. D.,
Richmond, Va.

Blood sedimentation is a simple laboratory procedure that may be carried out in any office at little expense and no great technical skill on the part of observer. It has been known for centuries that the blood from sick persons separated into two layers of serous and cellular much faster than in normal individuals. This phenomenon of blood sedimentation was observed by John Hunter in 1791, and a hundred years later Ashhurst taught that coagulation of blood in inflammation differs from normal. In 1918 Farhaeus re-introduced and popularized the procedure as a test for pregnancy. It is of little use, however, for in this condition it is seldom diagnostic before the third month and, therefore, of little practical help. Since that time more than five hundred articles have appeared in medical literature on practically every disease with a consequent narrowing of its field of usefulness. The experimental stage has been passed and it is now proven to be a most useful and popular laboratory procedure. No laboratory test can supplant or replace careful physical examination and sound clinical judgment, but careful and accurate laboratory studies are of paramount importance in accurate diagnosis and correct treatment. We believe that the sedimentation rate is one of the most important of all laboratory tests and is destined to become a routine procedure in all careful examinations. Its chief field will be in differentiating functional from inflammatory disease, and its greatest use will probably be in respiratory and gynecological diseases.

Numerous methods have been introduced for doing the test, and naturally much confusion exists in interpretation of results. After careful study of various methods, we have adopted the 1 c.c. graphic method of Cutler as the most informative and useful. Cutler's method is as follows: 1 c.c. Cutler sedimentation tubes are used. Zero is at the 1 c.c. level and the graduations increase downward to 50. One c.c. of freshly prepared 3 per cent sterile sodium citrate solution is drawn into a perfectly dry syringe before puncturing the vein. The needle is then inserted into vein and syringe filled to 1 c.c. mark. The contents are thoroughly mixed by inverting the syringe several times. It is then transferred to a Cutler tube and reading is made by observing the level of the sedimenting column of red blood cells every five minutes for one hour. Sedimentation time is the period that sedimentation rate is less than 1 m.m. in five minutes. This

*Read at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

is recorded graphically. The normal index is 8 and 10, respectively, for men and women at the end of one hour.

Acute inflammatory or degenerative diseases produce most marked and abrupt changes. The various curves are called horizontal line, indicating normal or absolute quiescence; diagonal line, quiescence; diagonal curve, slightly to moderately active; and vertical curve, moderately active. Malignancy, exudative tuberculosis, pneumonia, and acute arthritis give the most rapid rate in our series. Slow rates are observed in allergic conditions such as asthma, migraine, urticaria, and to a less extent in whooping cough and intestinal parasites. These conditions, therefore, should be taken into consideration in interpretation of results.

This report is based on 1250 examinations made on 247 patients at Pine Camp Hospital. It must be remembered that this test is not specific, and we believe that its greatest usefulness lies in determining toxemia rather than etiology. Cancer, however, has produced such a rapid sedimentation rate in our experience that in this condition we consider the test both diagnostic and prognostic.

In addition to the classification adopted by the National Tuberculosis Association of minimal, moderately advanced, and advanced, depending on amount of lung involvement, and active, quiescent, or arrested, depending on presence and duration of constitutional symptoms such as fever, tachycardia, loss of weight, cough, expectoration, hemoptysis, and pleurisy, we have classified these qualitatively as exudative, productive and mixed, depending on whether the lesion is acute pneumonic, fibrous, or combination of the two.

We find that the exudative type of tuberculosis gives the most rapid rate and this rate indicates severity of lesion rather than amount of lung involved. In mixed lesions, that is the exudative and productive, changes in graph are produced in proportion to amount of exudation, while the proliferative or fibrous type of lesion produced no great change even though cavitation was present.

The table below shows how closely the rates correspond to clinical picture, and we are not able to say whether we or sedimentation rate is in error where a discrepancy exists.

The following case histories are illustrative of change and importance of sedimentation rate in our experience:

Miss I. B., white, female, aged 40, was first seen in April, 1931, complaining of asthma of three years duration.

Past history of tuberculosis since 1925. Complete thoracoplasty on right side one year later with excellent collapse and good clinical result. Patient has been working regularly but is considerably annoyed by spring and fall attacks of asthma.

Physical and X-ray examinations show right lung collapsed by thoracoplasty. Left lung somewhat emphysematous. Blood sedimentation normal and examination negative except for positive dermal reactions to several pollens. Desensitization was started with extracts of offending pollens.

Two years later, in April, 1933, the sedimentation rate showed marked change, the index now being 36. Patient was symptom free and nothing was found to account for the marked drop in sedimentation rate. However, on strength of rapid sedimentation a more careful study revealed a small tumor in the left breast. A surgical consultant advised immediate removal. The pathologist reported carcinoma. Two months later the sedimentation rate had returned to normal. We have had other similar experiences that impress forcibly on our minds the usefulness of this procedure.

Miss C. B., white, female, aged 28, was first seen on February 26, 1933.

C. C. Cough, fatigue, fever, chest pain, night sweats, and loss of weight.

P. I. Began with a cold two weeks ago.

Examination: Shows a pale nervous young

	H. L.	*Clinical arrested*	*D. L.*	*Clinical quiescent*	*D. C.*	*Clinical active*	*V. C.*	*Clinical very active*
Minimal	65%	60%	26%	30%	2%	0%	9%	10%
Moderately advanced	28	26	57	58	5	5	10	10
Advanced	10	12	29	30	21	20	40	38

H. L. Horizontal line
D. L. Diagonal line
D. C. Diagonal curve
V. C. Vertical curve

woman, weighing 104 pounds. Pulse 100. Temperature 99.8 degrees. Chest is flat, with respiratory excursions restricted on right. There is broncho-vesicular breathing, increased vocal resonance and decreased resonance with medium and large moist rales from level of third rib to base on right. Left lung negative.

Stereoscopic films show an irregular shaped cavity the size of a five-cent piece in the hilum area on the right, with an acute exudative tuberculosis extending outward and downward from hilum into the lower lobe on right. Left lung negative.

Sedimentation rate shows a diagonal curve with index of 26. Two months later after satisfactory collapse of right lung, a diagonal line with index of 14 is seen. The curve has gradually flattened out. Since that time graph has shown a horizontal line. The patient's lung is completely collapsed and she is symptom free and back at work.

CONCLUSIONS

1. Sedimentation test is an inexpensive practical procedure that may be carried out at bedside or in office. It is not intended to supplant other recognized laboratory procedure, but in adult pulmonary disease it is more useful than any other blood studies known to us.

2. The presence of activity in pulmonary disease causes marked changes in sedimentation rate of blood. These changes are not dependent on amount of lung area involved, but on activity of lesion. Patients with acute minimal involvement show characteristic curves. Extensive old fibrotic lesions with cavitation may show normal reading. We have seen this in four instances.

3. Sedimentation is not a specific test. Inflammation anywhere in body causes rapid rates whether it be in the para-nasal sinuses, fallopian tubes, gall-bladder, appendix, or bronchi. These and other enumerated conditions would necessarily have to be eliminated before evaluating your findings.

4. Malignancy causes the most marked change and the curve produced is so characteristic and constant that it is almost diagnostic in atypical lung lesions.

5. It is an invaluable method of determining unhealed areas in a lung collapsed by artificial pneumothorax. We are so sure of its value here that we continue these treatments until the rate is normal regardless of any other evidence indicating a healed lesion.

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Professional Building.

DISCUSSION

DR. J. A. PROFFITT, Burkeville: As you have probably concluded, this test is not new; it is used more extensively now than at any previous time. We use it routinely at Piedmont Sanatorium. Most of the tuberculous pathology in the Negro race is the acute exudative type. This produces a very rapid sedimentation with the acute vertical curve, which means the disease is very active. In fact, we find some rates faster than the case with carcinoma.

The sedimentation rate has probably no value in differential diagnosis, and probably none in diagnosing carcinoma, although we have had no experience with the test in this disease.

In my opinion, the greatest value of the test is to cause the physician to search further for organic lesions to account for the increased rate. To illustrate, I will cite one of our cases. On admission the patient's sedimentation rate was 21 m.m. in one hour. After two months of rest in bed we believed that the tuberculosis was improving and at this time the rate was 21. We did not think that tuberculosis was causing the continued increased rate. Further investigation revealed a chronic infection of the prostate, which was treated and the rate returned to normal.

It cannot be too strongly emphasized that a normal rate does not exclude serious disease. It is perfectly possible to have a normal rate with advanced tuberculosis. This simply means that the destruction of tissue or absorption of toxins is not great enough to affect the settling of the red blood cells. When we find an increased rate, as Dr. Harper says, it is up to the physician to find the cause. The test must be interpreted with an open mind. If we do this, I think it will help us to become keener physicians.

DR. W. AMBROSE MCGEE, Richmond: I enjoyed Dr. Harper's paper very much and am glad that he was so successful with the sedimentation test. He did not (I presume purposely) mention the effect of anemia on the rate of sedimentation in the tube. The greater the anemia, the more rapid the rate of sedimentation. Walton has worked out a rate for correction for anemia, so that you can eliminate that factor.

Dr. Harper said the sedimentation test is highly valuable in tuberculosis. Blue Ridge was kind enough to send me blood smears and sedimentation rates on forty children at the Sanatorium. We tried to compare these two tests with an open mind, to find if one is more valuable than the other. We found in the majority of cases where there is much activity the sedimentation rates and the Schilling blood counts rather parallel each other; but in the cases with slight activity (the cases that they call "suspicious"), the Schilling blood count was far superior to the sedimen-

tation time. I have occasionally seen a normal sedimentation time among these children where there was known activity, but I have never seen a normal Schilling count in such cases among those children we studied. You might get a normal sedimentation time, but you will not get a normal Schilling blood count where there is activity of the tuberculosis.

The Schilling blood count has one draw-back: it requires more technical training, although when we get out of school these days, that should not be a factor.

The advantages of the Schilling count are that the children are not frightened, that one can study all the blood cells, including the monocytes, which give you some idea of the individual's power at resistance, that the test requires very little time and the count can be done days later if desired.

The work that they were allowing me to do at Blue Ridge was unfortunately stopped, for the simple reason that the children objected strenuously at being stuck in the vein. For that reason I do not believe the sedimentation test is at all practical for continued work among children. With adults it is practical and I think should be done along with the Schilling count.

These two tests (the sedimentation time and the Schilling blood count) offer much in the prognosis of adults and children, especially children, where it is so hard to tell when they are improving.

Question: In a pregnant woman with carcinoma of the breast, if the carcinoma is removed, has the sedimentation time any value in indicating whether the carcinoma has been completely removed?

DR. HARPER, closing the discussion: Answering the question, if I understood it correctly, the doctor asked if the sedimentation test would help us to know whether all the carcinomatous tissue had been removed at the operation. I do not believe it would—not immediately. I think at the first indication of any activity on the part of that lesion, though, you would get a change in the sedimentation rate; but I believe if a small growth like that were completely removed you could not possibly say, unless there were cancer somewhere else that would influence it. Pregnancy causes a marked change in sedimentation rate and it would not be at all affected by removing a cancerous breast.

As Dr. McGee says, the test requires the getting of blood from a vein, and I can see how that might be objectionable in small children. I have had no experience whatever with children; my experience has been with adults, and we have had no objection at all from the patients in the sanatorium. They are very eager to know the results when I have made a test, and are just as much interested in that as in their pulse and temperature.

GRANULOSA CELL CARCINOMA OF THE OVARY—WITH A CASE REPORT.

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These tumors, which are apparently derived from the germinal epithelium of the graafian follicles, arise, according to Robert Meyer, from rests of granulosa cells in the medullary portion of the ovary, particularly from congenitally misplaced rests. He divides them into three main types—folliculoid, cylindroid and sarcomatoid. Ewing describes these tumors as being characterized by a honeycomb texture, small alveolar structure with cells of an embryonal character and by slight malignancy.

Robinson says the chief morphological difference between the granulosa cell cancer and other forms of cancer are: "(1) the uniformity of the proliferating epithelium, particularly during the early stages of the neoplastic development; (2) the absence of mitosis, with rare exceptions; (3) the absence of infiltrative and destructive tendencies; and (4) the spreading of the tumor by continuity and extension and not by way of the lymphatics and blood stream."

In 1931 Meyer collected thirty-three cases, three of which occurred in children. The fact that some of the women in extreme old age had a marked hypertrophy of the breasts with galactorrhea and some of the children showed a marked development of the sex characteristics have shown that hormones are liberated which cause a rejuvenation in older women and precocious sexual changes in children.

These changes in sex development are so characteristic in some patients that Novak makes the following statement: "If, in a (child) patient with mammary hypertrophy and other secondary sexual characteristics present including menstruation, an ovarian tumor is revealed, it is almost certain to be of the granulosa cell variety." He cited the case of a child reported by Lenz in whom, at the age of three months, the breasts were well developed and at four months menstruation began. A small tumor of the left ovary was found later by examination.

At the age of fifteen, however, there was no evidence of the tumor and the patient was normal in her sexual development.

Novak also refers to one of Meyer's patients who, at the age of five, showed marked mammary hypertrophy along with menstrual bleeding. After removal of the left ovary and resection of the right, both of which contained tumors, the breasts returned to normal and the bleeding stopped, but both returned three years later because the tumor had recurred in the remaining portion of the right ovary. Following another operation the breasts again returned to normal, the bleeding disappeared and the patient was well ten years later.

Since ovulation is dependent on the action of the anterior hypophyseal lobe and the granulosa cell tumors cause only an excessive formation of folliculin, Novak says that pregnancy is not to be expected in individuals who have these tumors. In fact, Schulze suggests that sterility in these patients may be dependent on endocrine influences from the tumor. Meyer says that the endometrial hyperplasia is due to the proliferation of granulosa cells which produces an augmented hormonal effect.

Schulze says there is very definite evidence that the tumor elaborates ovarian follicular hormone, which no doubt has much to do with the hyperplastic endometrial changes so frequently seen in patients who have these tumors. This endometrial hyperplasia, Taussig believes, may go on to the development of adenocarcinoma.

The clinical course and pathological studies both indicate that the degree of malignancy in these tumors is relatively low. Only three of the series of thirty-three reported by Meyer later died from metastases.

CASE REPORT

Mrs. L. H., age 36. This patient consulted the writer on February 17, 1931, on account of cessation of menstruation. She had regular menstrual periods until May, 1930; then another normal period in September, 1930. There had been no menstruation for six months and she had experienced the usual nervous phenomena which go with menopause. The next evidence of menstruation was noticed in December, 1932, about twenty-seven months after the last period. Then the menstrual periods were regular but very profuse and prolonged, lasting over a period of ten days for three months; then, ten days after the menstrual flow had stopped, she noticed a small amount of vaginal bleeding which continued in spite of the usual hormone injections until the operation which was performed May 14, 1933.

When examined in April, 1933, the pelvis was found to be entirely negative but, at a later date, probably because the heavy tumor had fallen into Douglas' pouch during the patient's trip to the office, a large mass the size of a small orange was found posterior to the uterus, freely movable but questionably attached to the fundus. A diagnosis of uterine fibroids was made.

Operative Findings: A large irregular solid tumor the size of a large orange, with a pedicle containing large blood vessels, was found wedged behind the uterus. The tumor was not adherent to any of the surrounding structures. Since there was a question of malignancy, a total abdominal hysterectomy with the removal of both ovaries, both fallopian tubes and the entire uterus, including the cervix, was performed.



Fig. 1.—Shows tumor with its attachment and other pelvic organs.

Pathological Report (W. D. Forbus, M. D.)—*Gross Examination:* The left ovary measures two cm. in diameter. It is firm in consistency and resembles a senile ovary. The right ovary measures ten cm. in diameter, the external surface being slightly irregular and lobulated. On section, the large tumor in the area is composed in its greater part of yellow firm tissue distributed throughout this yellow tumor. There are several varying sized cysts, some of which are filled with blood. The walls of these cysts are usually smooth. From a gross ex-

amination it is apparent that we are dealing here with a malignant tumor. The yellow tissue is very suggestive of luteal tissue.

Microscopic Examination: This tumor strikes one at once as one relatively uncommon of the



Fig. 2.—Shows tumor on section.

ovary. It is obviously malignant in character and most likely carcinoma. The extraordinary yellow color and multicystic growth is impressive. In the microscopic section one finds a histological structure which is common to the granulosa cell type of carcinoma.

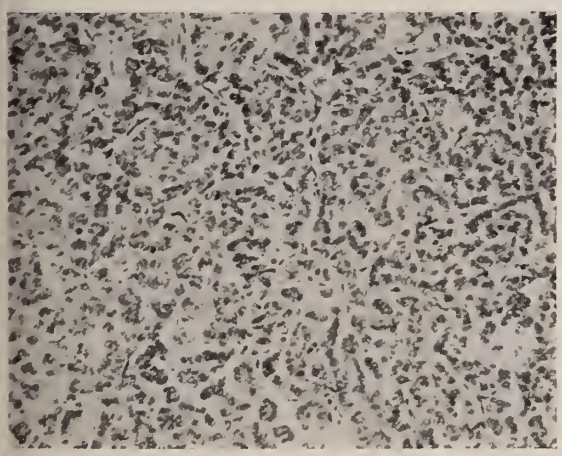


Fig. 3.—Photomicrograph of granulosa cell carcinoma (low power).

The endometrium is characterized by variation in the size of the glands. Some appear large and cystic in character while adjacent to these are small round glands. The endometrium is not as we often see in some phases of the menstrual cycle and especially not as thick as is found in hyperplasia of the endometrium. It is very suggestive of hyperplasia.

Diagnosis: Granulosa cell carcinoma of the ovary, senile ovary, cystic cervicitis, hyperplasia of endometrium (?).

SUMMARY

A case of granulosa cell carcinoma of the ovary is presented. No post-operative irradiation was employed since the tumor and pelvic organs were completely removed. Such a radical operation seems justified in individuals at this age even if the tumor is of a low grade malignancy.

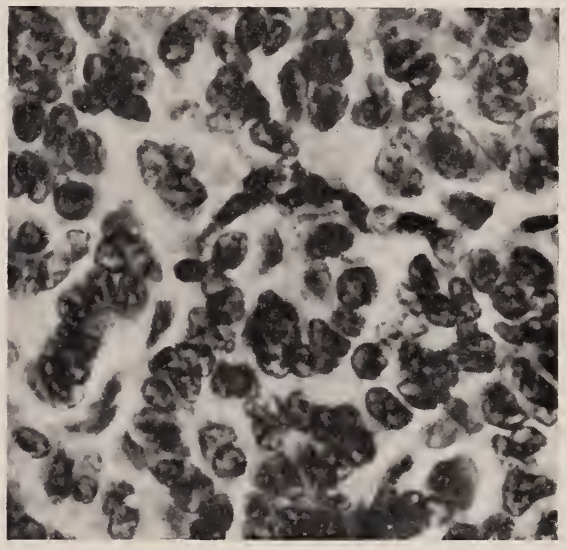


Fig. 4.—Photomicrograph of same tumor (high power).

At the present time, this patient is apparently enjoying perfect health except for a lessening of the libido.

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BROMIDE INTOXICATION OR BROMIDE PSYCHOSIS.

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Bromide intoxication or bromide psychosis may be defined as a chain of neurological symptoms caused by the ingestion of large doses of bromides, which are relieved by the withdrawal of bromides and the administration of sodium chloride.

In this paper I am not presenting anything new or spectacular; but I wish to discuss the symptoms and treatment of the condition, give laboratory procedures used in its diagnosis in detail, and present one case at some length.

A review of the literature from 1875 on this subject shows a spasmodic case here and there, the symptoms of which, in the light of our present knowledge and the fact that the psychosis followed the ingestion of bromides and disappeared with its withdrawal, would lead us to believe that the etiology was correct.

One of the earliest reported cases occurred in the family of an English apothecary in the late 80's, the servant having filled the salt cellars from the barrel containing sodium bromide, which was next to a barrel of sodium chloride. The entire family developed a toxic psychosis that cleared up after several weeks.

SYMPTOMATOLOGY

Acute poisoning from a single very large amount shows in profound stupor lasting several days, with slowed respiration and depression of all body functions.

Chronic poisoning or bromism results from the medicinal use. The symptoms may be depressant or psychotic. In the depressed type, the patient is dull, stupid, indifferent, the face expressionless, pale, usually pimpled, the eyes heavy, all mental processes and movements sluggish, speech slow, replies to questions delayed, the memory defective, and walking deliberate; and there are loss of appetite, nausea, constipation, loss of sexuality, and a general lowering of vitality and vigor. The pupils and corneal, pharyngeal and deep reflexes are sluggish. This is the state to which many epileptics have been brought by bromide treatment.

In the psychotic type, the symptoms are restlessness, apprehension, hallucinations and delusions, disorientation, and ideas of persecution. In serious cases the respiration becomes slow, labored and shallow, the pulse rapid and feeble, there is fever and death may occur.

The bromide rash is usually present although it may be absent in cases of intoxication. It may be described as a discrete acneiform, pustular, infiltrated or furuncular rash on the face, neck, and chest. A rash has been reported on the tongue and hard palate. Occasionally there is erythema or urticaria. But more serious skin lesions occur, notably a pemphigus-like eruption, an extensive granulomatous ulceration of the arms and legs, or a nodose bromoderma of the legs with acute painful areas of inflammation. Bromide eruptions have been mistaken for tertiary syphilides.

THEORY OF BROMIDE THERAPY

Bromide therapy to be rational must, on the one hand, produce the desired effect of the drug and, on the other, avoid the danger of bromide intoxication. The foundation of bromide action and consequently also that of a rational treatment are based on the relations between chlorides and bromides—the chloride-bromide equilibrium or replacement—which should therefore be discussed briefly.

Sodium chloride constitutes the greater part of the electrolytes of the body and its ions are essential for the functions of most cells. Since it is constantly excreted, mainly in the urine, it must be constantly replenished. The body maintains its chloride concentration with remarkable constancy. The excretion varies with the salt intake but lags somewhat behind in time. If the supply of salt is stopped, excretion falls within three days to a lower level, but the body retains its normal salt content.

The excretion of chlorides can be hastened by the administration of bromides and iodides. Conversely, the administration of chlorides hastens the elimination of these salts.

If bromides are introduced into the body, their excretion starts rapidly but proceeds very slowly; so slowly, in fact, that even twenty-thirty days after medication has been stopped the excretion of bro-

mides is not completed as shown in the case herein presented. Hence, a retention of bromides takes place which is due to the fact mentioned that bromides in part replace chlorides. Thus, a sort of "saturation" of the body with bromides takes place, so that after a certain period in prolonged medication no more bromides are retained and the intake and excretion are balanced. The chloride content of the blood is then diminished, the chlorides having been partly replaced by the bromides.

A replacement of more than 40 per cent of the chlorides of the blood by bromides is fatal. Intoxication symptoms generally appear when from 25 to 30 per cent of the total halogens are represented by bromides; there exist, however, individual differences, a fact that must be born in mind.

After this, it is easily understood that the action of the bromide medication depends not only on the bromide intake but also on the chloride intake. That is to say, prescribing bromides without knowing the chloride intake or the bromide saturation is the same as letting a patient take as much or as little bromides as he chooses. With equal doses of chlorides and bromides, bromide intoxication is produced in three weeks.

The routine dosage of bromides from 45 to 75 grains (3 to 5 Gm.) a day is based on the chloride intake of about 225 grains (15 Gm.); but not all persons have a chloride intake of 225 grains Wuth of Johns Hopkins had the urinary chloride excretion and consequently the intake taken from twenty-five patients who had no other disease leading to disturbance of chloride metabolism, such as pneumonia, cancer and nephritis, and who were on the relatively uniform hospital diet. These showed a variation of from 2.68 Gm. to 15.84 Gm. with an average of 7.4 Gm. As stated above, the sodium chloride intake should be about four times the bromide intake in order that the so-called chloride bromide equilibrium may be maintained. Hence it is easily seen that bromides in doses of 4 Gm. daily will very quickly produce intoxication in a patient taking only 2.5 Gm. daily of sodium chloride and will never produce it in a patient taking 15 Gm. of the latter. I may repeat again that equal doses of chlorides and bromides will produce bromide intoxication in three weeks.

LABORATORY PROCEDURES

Bromine is present in the following tissue fluids: blood, urine, saliva, gastric content, and spinal fluid. It may be liberated in suspected tissue fluids by the addition of a few crystals of potassium permanganate and a few drops of concentrated sulphuric acid. After the test tube has been agitated, a small strip of filter paper, impregnated with fluorescein and moistened with dilute acetic acid, is held to the mouth of the tube, the escaping bromine immediately combines with the fluorescein to form eosin, giving a bright pink color on the test paper in contrast with the lemon yellow color of the fluorescein.

The presence of chlorine, which is liberated at the same time instead of interfering with the test, apparently makes it more sensitive. This test is so sensitive it will detect bromine in solutions of 1:50,000 or 2 mg. per 100 c.c.

The urinary test is as follows: to 25 c.c. of urine about 1 Gm. of animal charcoal is added, mixed well, allowed to stand for a few minutes and then filtered. To exactly 5 c.c. of filtrate measured into a test tube, 1 c.c. of 20 per cent trichloracetic acid and 1 c.c. of 0.5 per cent gold chloride solution are added; a brown shade indicates the presence of bromides.

The method of determining the bromide content of the blood is as follows: 10 c.c. of blood is drawn as usual and allowed to clot. To 2 c.c. of the serum, 4 c.c. of distilled water and 1.2 c.c. of 20 per cent trichloracetic acid are added. After standing for half an hour, the mixture is filtered through a small filter. The filtrate must be clear; if necessary the solution is re-filtered. To each c.c. of the filtrate, 0.2 c.c. of 0.5 per cent gold chloride solution is added and then compared in the comparator with the color tubes. On these tubes are figures which indicate the number of milligrams of sodium bromide per 100 c.c. of blood serum. The procedure is very simple provided one has a comparator.*

DIAGNOSIS

All authorities say that the condition is much more prevalent than it is diagnosed. Provided one keeps it and its symptomatology in mind, the diagnosis is comparatively easy with the aid of the laboratory procedures given above.

For the chemical diagnosis in a questionable case of bromide intoxication it is advisable first to try a

*The comparator with the necessary reagents and pipets is manufactured by the La Motte Chemical Products Co., of Baltimore, Maryland.

simple test for bromides in the urine. If this is negative, bromide intoxication can be practically excluded. If this test is positive, then it will be necessary and essential to determine the absolute bromide content of the serum with the comparator. When the blood bromides increase beyond 150 mg. per 100 c.c. of serum, Wuth says that the patient is liable to intoxication symptoms and he speaks of bromide content above this figure as the "toxic zone."

In a personal communication to the author, Wile, of the University of Michigan, emphasizes the fact that occasionally a case may be seen which is clinically bromide intoxication without any doubt whatever and in which bromide may be absent from both the blood and urine. This, he explains, is due to the fact that the bromides are stored in the body tissues, probably the liver mainly, and are not in circulation. In such cases he recommends the injection of 150-300 c.c. normal saline intravenously. The sodium chloride will dislodge the bromides from the body tissues and they then may be found in the blood and urine.

TREATMENT

As stated above, the treatment is the withdrawal of the bromides and the ingestion of large amounts of sodium chloride. It may be given by hypodermoclysis, intravenously, orally, rectally, or by putting the patient in a salt bath, which is kept at body temperature. Some authorities apply sodium chloride compresses to the local lesions likewise.

Normal saline may be given in 100 c.c. doses. If it is well tolerated it may be increased to 400 c.c. twice a week, or as frequently as daily. Some use sodium chloride ʒj in a glass of buttermilk t. i. d., others give sodium chloride gr. XV by mouth t. i. d. As a prophylactic to prevent skin rash and other undesirable effects some administer sodium chloride with the bromide when the latter is given in large doses constantly as with epileptics; under such circumstances, it is questionable how much bromide reaches and acts on the nervous system. The introduction of large amounts of sodium chloride results in a rapid elimination of the bromide with occasional renal irritation.

X-ray therapy is used on the cutaneous lesions in addition to the ingestion of sodium chloride. The irradiated lesions will disappear twice as fast as those that are not.

CASE REPORT

Mrs. A. U., age 32 years, housewife, Lithuanian, born in Scranton, Pa. She is a fat, jovial individual always laughing and talking regardless of her condition. *Family History:* Husband living and well, one daughter, age 12 years, who last year had an appendectomy and acute rheumatic fever, otherwise her health is good. *Past History:* Health has been good until four years ago when she had rheumatism, following which she had her tonsil removed. Two years ago she had pleurisy for one week. I saw her at my office in September, 1932, at which time she was complaining of weakness, her weight was 200 lbs. She was sent to the Wilson Memorial Hospital, Johnson City, N. Y., for diagnosis, and she was put on a very rigid diet for the reduction of her weight. Electrocardiogram revealed an auricular fibrillation which was considered at first to be due to a masked thyroid condition since the B. M. R. was +28, later +12 and finally +6. There were no murmurs present in the heart at that time. X-ray of the chest revealed a swelling in the pulmonic area which was taken to be mitral stenosis. The etiology of this was presumed to be the rheumatism that she had had four years previously. Under digitalis therapy her condition improved and she went home after four weeks in the hospital. She lost 21 lbs. during her stay there. She got along fairly well for one month. *Present Illness:* She began to decompensate regularly every four weeks. With rest in bed and increased doses of digitalis for a couple of days she would quiet down. She had a great deal of insomnia and restlessness. For this I gave her triple bromide compound in as high a dose as 60 grains at bedtime, beginning January 10th. From then until she came to the hospital she took eight ounces of the compound. The first of April she became decompensate again and increasing doses of digitalis had no effect. After some persuasion she agreed to hospitalization on April 15, 1933.

On admission physicial examination was negative except for the chest, which revealed a heart which was fibrillating, apex 135, radial 100; there was a systolic murmur at the apex which had developed since her previous admission, there were râles at the bases of both lungs. She was put on tincture of digitalis 2 c.c. q. 6 h. until the apex was 70. At the end of a week the apex was still 120, despite having taken 40 c.c. of tincture of digitalis. An

electrocardiogram showed toxic effect of digitalis. The drug was stopped at once; on the same day the B. M. R. was +19. On admission she was ordered sodium bromide gr. xx q. 4 h. for restlessness. Her cardiac condition improved and she was observed as a possible case of masked hyperthyroidism again. Two more B. M. R.s were +18 and +5, respectively. After due consideration the surgical service decided that a thyroidectomy was not indicated. Wassermann was negative, as was urinalysis. Blood counts were normal except for a leucocytosis of 14-20,000 with poly counts of about 80 per cent, which were unexplained. On May 10th, four weeks after admission it was noticed that an acneiform, pustular rash was developing on the face and the anterior chest. This was considered to be due to the bromide and it was discontinued at once. Within two or three days her whole personality changed; she became apprehensive, was depressed, her face was expressionless, she had delusions of persecution and thought continuously that someone was trying to get her, she complained of weakness, was scarcely able to stand, and her gait was ataxic. She would cry whenever anyone visited her or attempted to talk to her. She was very anxious to go home. Since she was not improving, I told her to tell her husband that I wanted to see him. He came into my office the next day, but she had not given him my message. He said that she did not know what she was saying. The patients in the ward became afraid of her after she had thrown soap and soap dishes at some of them. During each of her last two nights in the hospital she was so restless and frightened that morphia gr. 1/6 was necessary to quiet her. She was very depressed and still wanted to go home. Her husband agreed to get someone to stay with her at home and I discharged her on May 18, 1933, as unimproved. Her rash had disappeared somewhat. Her condition was considered to be bromide intoxication, but in the absence of a comparator or proper chemicals for urinalysis, it could not be confirmed.

Her condition remained the same, she continued to have delusions and illusions and complained of insomnia. Two days prior to her discharge from the hospital I began giving her strychnine gr. 1/60 t. i. d. Her appetite was very poor, she ate scarcely anything. She was afraid to be left alone in her room. About two weeks after her discharge the rash on her face became worse, although she was taking no bromide. She remained in bed all of the time except for short intervals in a chair, to which she had to be assisted. In general her condition was unchanged.

On June 10th the hospital received the bromide comparator and on Monday, June 12th, I obtained a specimen of blood for bromide determination. The laboratory reported 190 mg. of bromide per 100 c.c. of blood serum. The patient had had no bromide in the last thirty-two days. I went to see the patient as soon as I received the report and took empty 5 gr. capsules with me. These I filled at her home with sodium chloride from her salt box. I directed that she take one capsule q. i. d. In three days she was much stronger, was able to walk without ataxia and was eating a little better. On my next visit, three days later, there was marked improvement, her mental condition had cleared up almost entirely, although she was still afraid to stay alone. Blood taken at this visit was reported as containing 120 mg. of bromide per 100 c.c. of blood serum. During this week there was no edema of her ankles. In the afternoon following my visit, she was taken to Wagner Farm (a convalescent home in the country) with directions to continue sodium chloride, gr. xv daily. I saw her after she had been there two weeks. She was feeling fine, had walked about one-fourth mile that morning. During her first week there (her second on sodium chloride medication), there had been edema of her ankles but there was no evidence of it at that time. One week later the laboratory reported that her blood contained a negligible amount of bromide.

The clinical condition of the patient was the best I had seen her in during the two months following her recovery from the bromide intoxication. At the end of this time she began to fibrillate again. No amount of digitalis had any effect upon her. She gradually went down hill and died ten months following her bromide intoxication of pulmonary infarction. Autopsy showed multiple pulmonary infarcts and a typical fish mouth mitral orifice, confirming our diagnosis of mitral stenosis.

SUMMARY

Herein is presented a case of mitral stenosis which developed bromide psychosis or intoxication. It seems to be a combination of both the depressant and psychotic types described above. Thirty-two days after withdrawal of bromide, her blood showed 190 mg. of bromide per 100 c.c. of serum. It must

have been over 300 mg. when the bromide was withdrawn. After six days of sodium chloride, gr. xx daily, the bromide content of the blood dropped to 120 mg. with marked improvement of symptoms. Three weeks later the amount of bromide in the blood was negligible, showing that she was cured of her bromide intoxication. There was no edema of the ankles during the first week of sodium chloride medication, but edema appeared during the second week, and promptly subsided without treatment. This edema emphasizes the fact that kidney injury must be looked for in these cases when there is a rapid excretion of bromide following the ingestion of large amounts of sodium chloride.

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GALL-BLADDER DISEASE—REPORT OF ONE HUNDRED CONSECUTIVE CASES.*

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One hesitates to discuss such a small series of cases of a disease as universally prevalent as infection of the gall-bladder. Nevertheless, when an attempt has been made to individualize one's patients pre-operatively, operatively, and post-operatively, following them through to their termination, successful or otherwise, and drawing accurate conclusions from them, there will be many interesting factors worthy of discussion.

It is fully recognized that the management of the biliary tract disease, like the management of almost all other intra-abdominal diseases, has become a joint problem of the surgeon and the internist. While it is admitted that the treatment of gall-bladder infection, stones, cholangitis, etc., is surgical, the diagnosis, pre-operative and post-operative treatment present problems of great interest to the internist.

In this study and presentation of one hundred consecutive cases of gall-bladder disease, an effort has been made to record and tabulate their findings in all types of the infection, though each class is very small. This series represents practically all types of the condition found. It contains simple, uncomplicated chronic infections, with or without stones, acute empyema with marked secondary cholangitis, acute and chronic cases with stones impacted in the cystic and common ducts, secondary operations on primarily drained cases, cases associated with other acute intra-abdominal conditions such as appendicitis, duodenal ulcer, ulcer of stomach, diabetes, various degrees of myocardial changes, kidney complications and cancer of the liver, and three cases of gangrenous gall-bladders, securely walled off by omentum, which were ruptured on attempt to free the adhesions. In none of these cases, however, were gall stones or bile found free in the abdominal cavity. One of these patients is recorded with the deaths from bronchial pneumonia. Seventy per cent presented secondary anemia, varying from a very mild to a marked degree, though none were severe enough to demand transfusion before operation.

PRE-OPERATIVE TREATMENT

The pre-operative treatment consists of correcting as far as possible other associated conditons which are usually found secondary to the gall-bladder infections. These may be gastric distress, myocardial and nephritic changes, secondary anemia, and various forms of neurotic manifestations, all of which are usually manifested by the history of gastric distress, commonly termed nervous indigestion, gaseous eruptions. Precordial pain is usually rather marked. Quite a few of these cases came in with

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Norfolk, Va., December 5-7, 1933.

their own diagnosis of some cardiac trouble. Also frequently noted are various types of indigestion, which are worse in the evening, with no definite relation to the intake of food, periodical attacks of upper right abdominal pain with nocturnal exacerbations, pains under right shoulder blade, constipation, etc. Strict attention should be given other associated conditions, especially focal infections in the mouth, nose and throat. One realizes that gall-bladder disease itself rarely ever proves fatal. Statistics will show that the mortality is usually attributed to complications or other associated conditions. There are certain types of patients, such as diabetics, tuberculars, syphilitics and jaundice cases, that should be given other specific therapy, which will not be discussed in this paper.

The disturbance of metabolism is the most important single factor, and should be combated by free carbohydrate diet, elevating and maintaining the fluid balance, saline, glucose and water through all avenues. Supportive treatment, such as digitalization, and relieving as far as possible the great factor of fear is necessary, as it is essential that these patients be put to rest physically and mentally.

According to Coller and Maddock, the loss of fluid from the body may reach as high as 50 per cent during the operation and for the first four hours after the average major case. This estimation seems to be a fair one, as one frequently sees these patients simply drenched in perspiration, especially in the average post-operative bed. Therefore, it is imperative that the fluid balance should be maintained.

The much discussed question of *radical vs. conservative* operative treatment can and should be determined by an accurate and complete individualization of each case. This can be fairly accurately determined, regardless of the acuteness of the condition, by the age of the patient, the chronicity of the case, and the severity and frequency of the previous attacks and the condition of the patient when admitted. The acute gall-bladder is frequently compared to the acute appendix from an operative standpoint. But when one considers the two conditions in an acute pathological process, it will readily be seen that the comparison is not as applicable as it first appears. There are factors presented in the two conditions that usually are decisive. For instance, *appendicitis*—

1. Occurs more frequently in the young and they stand operation well.
2. Has a marked tendency to rupture with peritonitis.
3. Due to the rapidity of onsets and rapid progress, the complications are acute.
4. Repeated attacks, if they subside, leave less sequelae.

Gall-bladder disease

1. Occurs more frequently in the aged, and usually they are a poor risk.
2. Rupture fortunately is rare, and of such a slow process compared to appendicitis that sufficient time usually elapses for the infection to be localized and walled off.
3. Complications are slower to develop and usually are of a more chronic nature.
4. Repeated attacks leave more destruction to the liver, heart and kidneys, with more or less permanent impairment of these organs.

So, in the opinion of the author, it is not a question of when to operate in the acute case, but an accurate estimate as far as possible of the amount of damage that has been done to the heart, liver and kidneys, and the best procedure to limit the amount of damage that is likely to be done to them in the future. In the aged, with a long history of repeated attacks, the mortality and morbidity is found to be in proportion to the chronicity of the case and the severity of the repeated attacks.

OPERATIVE TREATMENT

Unlimited skill and dexterity cannot overcome position and proper vision. So it is very necessary that these patients be properly arranged on the table with adequate lighting system, and the patient under spinal anesthesia should be made as comfortable as possible. It is essential that the operative technique be carried out as quickly as is consistent with thorough work. Attention should be paid to minor details, such as team work, proper walling off of the operative field, with only sufficient exploration and the minimum amount of trauma as is consistent with thorough relief of the condition present.

The author is not willing to agree at the present time with Lahey on his exploration of the common duct as a routine procedure. In his hands this method is doubtlessly safe, but with the average surgeon this is an extremely hazardous procedure, especially when we have other fairly accurate

methods of detecting stone in the common duct, such as the Cameron lighting system, palpation, jaundice, etc., but one should not be deceived by enlarged and calcified glands in this area.

POST-OPERATIVE TREATMENT

Especially in the aged, it is of extreme importance that these patients be made comfortable and, with the exception of the pus cases, should be allowed any position in bed that they desire. Spinal cases also are an exception for the first three or four hours. It is just as important to maintain your fluid balance post-operatively, and probably more so, than it was before the operation. In the respiratory and cardiac cases, the oxygen tent is of inestimable value. Opiates in sufficient quantities should be freely administered in order to keep the patient at rest. Fruit juices, carbohydrates and soft diet should be administered as soon as tolerated. It is becoming practically routine in the author's work to administer glucose intravenously post-operatively. Systematic bed exercise is carried out daily. We have gotten most excellent results in quite a few of our cases, that did not come back as rapidly as we thought they should, by trans-duodenal drainage, and, of course, the administration of bile when indicated. We usually collect this bile from the patient and re-administer it.

In this series there were seventy-six females and twenty-four males. The average age was 47.8. Oldest 74. Youngest 21. Average Wbc. 8,215. Highest 16,200. Lowest 3,600. In eighty-six cases the gall-bladder was removed. In fourteen cases it was drained. Three of the fourteen cases were re-admitted for a cholecystectomy. In two of the cases stones were impacted in the common duct. In one case the stone was overlooked in operation and the patient was re-admitted to the hospital eight months later when the stone was removed. One was for the closure of a fistula.

Anesthetics: Sixty-eight had nitrous oxide, local and ether; thirty-two spinal. Average time for operation fifty-four and one-half minues. Average stay in the hospital—pre-operative two and one-third days; post-operative fifteen and one-half days. There was a total of six secondary operations recorded. There were two cases of a partial cholecystectomy. One of these cases is still showing some symptoms and may eventually come to a secondary operation. The other case is symptom free, eight months post-operatively.

There was a mortality of 4 per cent, including one cancer case, one year after operation had been advised.

Report of deaths:

Case No. 9869. Male, age 60. Admitted to the hospital June 30, 1928, complaining of fever, chills, general aching, etc. Gave history of chronic indigestion, gas, worse in the evenings, periodic attacks of pain in the upper right quadrant, extending over a period of ten years, and very much worse for the past six months. Had been confined to bed for ten days before admission. Physical examination: Blood pressure 140/70. Pulse 100. Temperature 102.2. Urine: Trace of albumin. Few hyaline and granular casts. Hbg. 66 per cent. Rbc. 3,288,000. Wbc., 7,800. Polys. 81 per cent. On July 2nd, under local, gas and ether, gall-bladder was removed, but, due to the poor condition of the patient and the presence of pus, no other organs were examained Patient did very well until July 7th, when very suddenly he had a severe gastric hemorrhage and died before we could secure a donor. Three had been typed. Patient died five days after operation.

Case No. 23,528. Male, age 41. Admitted April 13, 1930. Gave history of attacks of upper abdominal pain with nausea and vomiting for twenty years, with jaundice on one occasion. For the past year has had an average attack of one a month. Just subsiding from an attack. Physical examination: Other than the abdomen and the X-ray, negative. Blood pressure 130/80. Hbg. 80 per cent. Rbc., 4,880,000. Wbc., 5,200. Polys. 65 per cent. Urine: negative. Operation under gas and ether on April 14, 1930, and appendix and gall-bladder removed. Progress notes showed him to have had an uneventful recovery until April 28th, at 5:30 A. M. After having had a very good night, was suddenly seized with pain in the chest and died at 6:30 A. M. from pulmonary embolus.

Case No. 9038. Female, age 73. Admitted November 9, 1927. Past history showed she had had acute gall-bladder attacks for the past eight years, gradually getting closer together and more severe, accompanied with jaundice on several previous occasions. Had been confined to bed with the present attack for two weeks prior to admission, with chills, and high fever, and a great deal of pain. On admission the patient was acutely ill, septic and dehydrated, with moderate jaundice. Wbc., 13,800.

Polys. 74 per cent. Urine: Trace of albumin. Many hyaline and granular casts. Few Rbc. Occasional pus cell. Blood pressure 190/90. Operated November 11, 1927. Gall-bladder was embedded, gangrenous, contained approximately 5 oz. of pus and one large stone in a cystic duct. Gall-bladder was ruptured on attempt to free adhesions. The field being well walled off, no soiling occurred. Stone removed, gall-bladder drained. Patient did very well until November 23rd, at which time she developed a broncho-pneumonia. Died November 25, 1927.

Case No. 11,213. Female, age 55. First admission to the hospital June 18, 1929. Diagnosis of acute gall-bladder disease with stones. Remained in the hospital until June 23rd; as the trouble was subsiding she refused operation. Was re-admitted to the hospital January 5, 1930, with another acute attack. She was operated January 8, 1930. Had acute infection with imbedded gall-bladder, which was removed. The liver was enlarged and presented unmistakable signs of cancer. Discharged from hospital January 25th. Patient died six months later from cancer of the liver.

Summary of Deaths

1. Pulmonary embolus, one, died fourteen days after operation.
2. Broncho-pneumonia, one, died fourteen days after operation.
3. Massive gastric hemorrhage, one, died five days after operation.
4. Cancer of liver, one, died six months after operation, but one year after operation advised.

Summary

1. The small series of cases here presented revealed most all of the different types of infection usually found in the biliary tract.
2. The close cooperation of the surgeon and the internist makes for a more comfortable patient and better end-results.
3. The detection and elimination as far as possible of complications and associated diseases are stressed.
4. Establishing and maintaining the metabolic ratio to the highest degree is essential.
5. The course of procedure in the acute case should be determined by a complete study of each individual case, and should not be considered in mass formation or as a group of cases.
6. Spinal anesthesia well handled has been the ideal one.
7. Team work is essential.

Medical Arts Building.

CESAREAN SECTION.*

PAIGE E. THORNHILL, M. D.,
Norfolk, Va.

I wish to discuss with you a few of the practical points about cesarean section, and show some slides belonging to Dr. Joseph B. DeLee, of Chicago, dealing with the new low operation.

I was able to find what to me was new and interesting history on the origin of the term "cesarean operation." About 700 B. C., a Roman king, in codifying the Roman law, ordered that abdominal section be performed on all women who died when far advanced in pregnancy, in order that mother and child could be buried separately. Some 600 years later, Julius Caesar, who overthrew the rule of kings and senate and established the line of emperors, continued this written law regarding abdominal section. Caesar himself was not born by this operation, as many have believed; his mother lived many years after his birth. But everything in the law which he established came, through general custom, to be described as "caesarean," after himself. Hence the surgical operation that was required by that law came to be known as the "cesarean operation." '

Prior to 1500 A. D., it was never attempted on a living woman, so far as known. It was first authentically performed in 1610, by Trautman, of Wittenberg, in a desperate situation. It was, of course, a heroic treatment of last resort, and up to recent years it has continued to be looked upon as a last, prac-

*Read before Norfolk County Medical Society, February 26, 1934.

tically hopeless, procedure. As recently as fifty years ago, the mortality rate was as high as 85 per cent.

With a background of hundreds of years like that, is it any wonder we require time to gain a new conception of its use?

Pre-natal care has, of course, been the important factor in bringing the mortality rate for cesarean down to between 2 and 5 per cent. I need spend no time arguing the advantages of pre-natal care; they are too generally conceded. The point is, that too often doctors have not sufficient interest or sufficient time to practice the things they know, nor even time to tell their patients the importance of pre-natal care so that they can get the attention elsewhere. We need to note carefully this fact, that in Virginia, in 1927 and 1928, of 625 women who died from causes connected with childbirth, 60 per cent (377) had had no pre-natal care whatever. And nearly half of these were white.* So there is still plenty of room for improvement.

Briefly, about the indications for section:

First, and most common, is the question of disproportion in size between passage and passenger. When this is so pronounced that the operation is clearly indicated beforehand, as with a true conjugate of 5 cms., elective cesarean in the last week of pregnancy or the early hours of labor gives uniformly good results. But most of our troubles are encountered with cases of the border-line class, the moderate contractions. These have to be dealt with by careful examination and study in the ninth month, through methods of diagnosis that cannot be detailed here. But the essential point is to be aware of a sub-normal pelvis or an extra large child, so that the necessary extra care in diagnosis, with consultation and X-ray, may be had at a time when they will save trouble, and perhaps a life.

In many cases of this border-line type, a test of labor is justified. Experience teaches us that many a doubtful case may deliver spontaneously or with low forceps, because of good moulding or extra strong uterine contractions, two factors impossible to estimate with accuracy beforehand.

And I would like to mention, in passing, that there seems to be a wide difference of opinion as to what should constitute a test of labor. No definite time-period can be set; mild pains must be given longer than hard ones. To me, "test of labor" means close observation of progress in early first stage, by means of hourly abdominal and rectal examinations, with a *decision* as to course to pursue before the patient shows exhaustion. It may take only three hours, or it may require twelve. But until certain that section will not be necessary, examination by vagina must be avoided.

Regarding placenta previa, implantation of the central or near-central type is a proper indication for abdominal delivery. Even though the child be dead or non-viable, if the cervix is undilated, most authors believe section is justified on the mother's account, because the danger of fatal hemorrhage through vaginal delivery is too great. This is the one condition where the old high incision of classical type is still indicated; here it is needed to avoid incision through the placental site.

For previas of the lateral or marginal type, the better way is to control hemorrhage during dilatation by bag or gauze packing. This is usually safe and satisfactory. The common mistake made with cases of placenta previa is our failure to appreciate the meaning of that first slight painless blood. We do not grasp its significance; we leave her in her bed at home; we temporize, and hope, until the big hemorrhage begins,—as it is bound to do. That delay has cost many lives.

Premature separation of the placenta is also a proper indication for section, especially when the cervix is not quickly dilatable. This is a very dangerous obstetrical complication; the mortality rate is around 50 per cent; operation must be done quickly, otherwise the patient dies of internal hemorrhage. In addition to cesarean, hysterectomy is commonly needed, because the uterine wall has been so damaged that there is much danger of post-partum bleeding, atony, and sepsis.

Cesarean in eclampsia, in the majority of cases, is not good treatment. I appreciate the argument of those who contend that, since the condition is somehow due to pregnancy, relief must be sought through speedy delivery. But there is another side to the proposition; these highly toxic mothers, with damaged kidneys, damaged liver, with metabolic processes deranged, and resistance lowered, are bad operative risks, even under local or spinal anesthesia. The child, too, is likely to be so premature or toxic that its chances are not good. Where the mother is

*Virginia Medical Monthly, July, 1933.

moribund and the child still alive, section might occasionally be justified in an effort to save the baby. But for the ordinary patient who has had one or more convulsions, the logical treatment is that aimed at the mother's toxaemia direct. We now have effective conservative treatment, in phlebotomy, in glucose, magnesium sulphate, and sodium amytal intravenously, in morphine, and through elimination. As a rule, through these measures, control of the convulsions is soon gained. And clinics everywhere have shown that the mortality rate by conservative treatment is much lower. Newell, of Boston, Peterson, of Detroit, Brodhead, of New York, and others, give the death rate for cesarean in eclampsia as between 25 and 35 per cent; Stroganoff, in 1930, reported 5,000 cases of eclampsia treated conservatively with a mortality rate of only 10½ per cent, and clinics in this country show similarly improved rates under modified Stroganoff treatment. In the last *Journal of Obstetrics and Gynecology* (January, 1934), Binder of Jersey City in testing a modified radical treatment against conservative treatment over a period of five years, reports mortality rates of 17.7 per cent and 7.7 per cent for the two methods. Here is an improvement of more than 50 per cent, even though the radical treatment was only mildly radical, and up-to-date and approved methods were used in both series. The conservative treatment of eclampsia seems to win out over the radical in all tests. Consequently, cesarean in eclampsia has really passed out of date and is no longer recommended.

For cardiac lesions, with actual or threatening decompensation, cesarean under infiltration or spinal anesthesia offers probably the safest and best method of delivery.

The elderly primipara, who is anxious for a live baby, is not necessarily a candidate for this operation. Observation has shown that this bugbear of rigid cervix at forty years is not so constant nor as troublesome as we believed.

Fibroids and cysts are frequently a proper indication for section. When situated low, they may make delivery by the natural route a physical impossibility. Occasionally, too, section may be justified to save good perineal and cervical repair in a multipara with a history of difficult labors.

"Once a cesarean, always a cesarean" is an old aphorism no longer accepted. The decision rests upon the presence or absence of the former indications, the condition of the scar, and whether or not it seems to have healed by primary union. An incision that had any degree of infection in it, is not to be trusted. But those patients having good scars may be allowed normal labor, under close observation and preparedness.

In general, for a patient to be classed as favorable for section, three conditions must be fulfilled:

1. The vaginal tract must be free of active infection.

2. There must have been no vaginal examination made—at least without full surgical precautions, and no attempt at delivery.

3. The mother must not be exhausted.

What are the advantages of the low operation? Lower mortality and morbidity rates, by reason of the following:

1. There is less danger of infection and peritonitis. The lower segment of the uterus seems more resistant to infection; and, in case it does occur, the chances of limiting its spread and draining it are much better.

2. This safety permits a test of labor in the border-line cases, an important consideration.

3. In case hysterectomy, or other additional pelvic work, is necessary, no extension of the incision is required.

4. A scar in the lower segment is much less likely to rupture in subsequent labor than one in the upper contractile portion.

5. Fewer and less troublesome adhesions form. The sutured wound is at rest, because, being in the lower segment, it is less disturbed by the recurring after-pains.

Dr. DeLee has worked out with exactness a very fine technic for this low operation, as his slides will presently show.

Other men have developed modifications aimed to exclude infection. For instance, Hirst unites the visceral and parietal peritoneum before opening the uterus, thus closing off the peritoneal cavity. But the real extra-peritoneal operations, where the peritoneum was dissected upward from below and not opened, have been mostly dropped as being technically difficult and impractical.

For the case that is undoubtedly infected, cesarean should be followed by hysterectomy. Occasionally we are called in emergency for consultation in a case

of severe dystocia: perhaps the attending physician had never seen the patient before, and, not having had an opportunity to examine her properly and study her condition, he had made effort to deliver her before we were called. We find a pronounced disproportion, one that makes vaginal delivery impossible except by a crushing operation. For a case of that type, when it is felt that delivery must be by section, the operation should be followed immediately by hysterectomy, all possible safeguards being employed to protect the peritoneum.

My personal experience with cesarean, though small, has been rather gratifying. In a small city, where the hard and complicated cases were referred, among 1,317 deliveries there were thirty-four abdominal sections, an incidence of 2.6 per cent. This incidence compares favorably with that of the large clinics.

The thirty-four sections were done on thirty patients, four being sectioned a second time.

Twenty of the thirty-four were elective operations, therefore done at the most favorable time.

Seven were cases referred in emergency.

None of the mothers died.

Five of the thirty-four babies were lost, as follows:

One by ruptured uterus. Two in cases of placenta previa where the baby was known to be dead before the operation started, and two were premature by two months or more.

The classical or high operation was done seven times, among the early cases. More recently, in every case where the uterus is to be preserved, with the one exception of placenta previa, the low operation has been adopted.

Of the twenty-nine live babies, eighteen were successfully nursed by their mothers.

In conclusion, three thoughts suggest themselves:

1. I commend to you the use of the low, in place of the old classical operation wherever possible, as giving a lower mortality and a lower morbidity.

2. Let us drop forever the idea that cesarean section is mainly a procedure of last resort for obstetrical emergencies. This is not its field of greatest usefulness.

3. Let us fix in our minds this truth,—that the proper utilization of cesarean section depends, like most other acceptable work in obstetrics, upon *prenatal care* and *study,* as its prime requisite.

500 Wainwright Bldg.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during June, 1934, showed the following cases: Typhoid and Paratyphoid Fever, 54; Diphtheria, 38; Scarlet Fever, 69; Measles, 3,670; Meningitis, 11; Poliomyelitis, 3; Rocky Mountain Spotted Fever, 7.

Typhoid and Paratyphoid Fever was reported from the following counties: Accomac, 1; Amelia, 2; Bedford, 2; Brunswick, 1; Caroline, 2; Carroll, 1; Chesterfield, 1; Craig, 1; Elizabeth City, 4; Fairfax, 1; Grayson, 1; Greenesville, 1; Henrico, 2; Lancaster, 1; Lee, 1; Middlesex, 1; Norfolk, 2; Russell, 2; Scott, 2; Smyth, 1; Southampton, 1; Tazewell, 2; Warwick, 1; Lynchburg City, 1; Newport News, 6; Norfolk City, 2; Portsmouth City, 1; Richmond City, 7; Roanoke City, 3.

Epidemic Meningitis was reported from: Albemarle, 2; Dickenson, 1; Tazewell, 1; Wise, 1; Norfolk City, 5; Richmond City, 1.

Rocky Mountain Spotted Fever was reported from the following counties: Albemarle, 1; Fairfax, 3; Greenesville, 1; Madison, 1; Orange, 1.

The cases of diphtheria were scattered in twenty-one counties and six cities.

Scarlet Fever cases were reported from twenty-four counties and seven cities.

The cases of measles were scattered in eighty-seven counties and eight cities.

SUMMER ROUND-UP: Reports from the field indicate that there will be a large increase in the number of children entering school for the first time next fall who have been examined this summer by their family physician.

This program is sponsored jointly by the Medical Society of Virginia, the school officials, the State Parent-Teachers' Association, and the State Department of Health.

The aim is not only to have every child entering school physically fit to do his work, but to strive to place his health supervision in the hands of the family physician where it belongs.

Physicians engaged in this work are asked to make any constructive criticism of the plan to Dr. W. P. Jackson, Chairman of the Child Welfare Com-

mittee of the Medical Society of Virginia, Roanoke, Virginia, or to Dr. B. B. Bagby, Director, Bureau Child Health, State Department of Health, Richmond, Virginia.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

Woman's Auxiliary to the A. M. A.

The twelfth annual session of the Woman's Auxiliary to the American Medical Association met in Cleveland, Ohio, June 11th to 14th, inclusive, with headquarters at Hotel Carter. Approximately 795 women, including 329 from Cleveland and 203 guests, were registered by noon of June 13th. All meetings were held at Hotel Carter, with Mrs. James Blake, the gracious president of the Auxiliary, presiding. The first general meeting met Tuesday, June 12th, at 9:00 A. M. and the invocation was offered by Dr. Herman A. Clair, pastor of the Old Stone Church. Mrs. Clyde L. Cummer, wife of the president of the State Medical Society of Ohio and general chairman of Committee on Entertainment of Women Guests, brought greetings from her committee. During the several meetings held, interesting reports of work accomplished during the past year were made by the chairmen of the standing committees and the presidents of the State Auxiliaries. The addresses by Dr. Junius B. Harris, of California, and Dr. W. W. Bauer, of Chicago, were much enjoyed and appreciated. The new president, Mrs. Robert Tomlinson, Wilmington, Del., was very charmingly introduced by Mrs. Blake and presented with gavel and the president's pin. An interesting part of this installation was the presentation to Mrs. Tomlinson of a beautiful basket of flowers sent by the State Medical Society of Delaware. The other new officers of the Auxiliary are as follows: President-elect, Mrs. Rogers N. Herbert, Nashville, Tenn.; vice-presidents, Mrs. Rollo K. Packard, Chicago, Ill.; Mrs. Otis F. Lamson, Seattle, Wash.; Mrs. J. Bonar White, Atlanta, Ga., and Mrs. Wm. Lett Harris, Norfolk, Va.; secretary, Mrs. Elmer S. Whitney, Detroit, Mich.; treasurer, Mrs. Eben J. Carey, Milwaukee, Wis.; and members of Board of Directors, Mrs. A. A. Herold, Shreveport, La.; Mrs. F. N. Scatena, Sacramento, Calif, and Mrs. M. L. Stevens, Asheville, N. C.

The Entertainment Committee extended a genuine and most cordial welcome to the visiting women at the Convention, and many and varied were the delightful entertainments given in our honor. The first of these was the Southern Breakfast at the Hotel Carter on Tuesday, June 12th, honoring Mrs. Southgate Leigh, Mrs. James Blake and Mrs. Robert Tomlinson. This proved to be a most enjoyable affair, abounding in true Southern hospitality. On the same day a luncheon was held at the beautiful Lake Shore Hotel, with a special treat for the ladies in the form of a fashion show, put on by one of Cleveland's leading Department Stores. Following luncheon, tables were arranged for bridge on the terrace overlooking Lake Erie.

On Wednesday, June 13th, the Woman's Auxiliary Luncheon was held at the Hotel Carter. This was the regular Auxiliary Luncheon, an affair held annually, and eagerly anticipated by the women guests. That evening a Musicale and informal reception was held at the Allen Memorial Medical Library, which is the home of the Academy of Medicine of Cleveland.

On Thursday, June 14th, a luncheon was given at the Cleveland Country Club. A second style show was put on at this time, the mannequins promenading around the Club swimming pool. After luncheon the ladies were taken in cars to view the beautiful gardens of Mr. and Mrs. Francis Prentiss. At seven o'clock that evening a "Bring-Your-Husband-Dinner" was held at Hotel Carter, and was followed by the President's Reception and Grand Ball, which took place in the spacious ballroom of the Hotel Cleveland.

On Friday, June 15th, the final day of the Convention, the Annual Golf Tournament was held at the Westwood Country Club. This brought to a close a round of delightful activities, making the Convention an outstanding success and Cleveland a pleasant memory.

Alexandria Society Formed.

The Woman's Auxiliary to the Alexandria Medical Society has recently been organized, and Mrs. Llewellyn Powell has been named as its first president. Mrs. H. A. Hornthal is secretary. Their first work will be to extend their membership by an active campaign.

Mrs. George T. Klipstein has been made chairman of the Ladies' Entertainment Committee for the annual meeting in October.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmary and Chemistry of the A. M. A.:

Bilhuber-Knoll Corporation
- Dilaudid
  - Ampules Solution Dilaudid, 2 mg. (1/32 grain, 1.1 c.c.
  - Hypodermic Tablets Dilaudid, 2 mg. (1/32 grain)
  - Hypodermic Tablets Dilaudid, 3.2 mg. (1/20 grain)
  - Hypodermic Tablets Dilaudid, 4 mg. (1/16 grain)
  - Tablets Dilaudid, 2.5 mg. (1/24 grain)

H. E. Dubin Laboratories, Inc.
- Aminophyllin—Dubin
  - Ampules Solution Aminophyllin—Dubin, 0.24 Gm., 10 c.c.
  - Ampules Solution Aminophyllin—Dubin, 0.48 Gm., 2 c.c.
  - Suppositories Aminophyllin—Dubin, 0.36 Gm.
  - Tablets Aminophyllin—Dubin, 0.1 Gm.

Gilliland Laboratories, Inc.
- Diphtheria Toxoid, Alum Precipitated (Refined)

Schering & Glatz, Inc.
- Medinal
  - Medinal Tablets, 5 grs.
  - Medinal Suppositories, 10 grs.

Frederick Stearns & Co.
- Neo-Synephrin Hydrochloride
  - Solution Neo-Synephrin Hydrochloride, 0.25 per cent
  - Solution Neo-Synephrin Hydrochloride, 1 per cent

Winthrop Chemical Co., Inc.
- Chiniofon—Winthrop
  - Tablets Chiniofon—Winthrop, 0.25 Gm. (4 grains)

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Nonofficial Remedies, 1934, p. 443):

Cheplin Biological Laboratories, Inc.
- Cheplin's Epinephrine Hydrochloride Solution 1:1000 Ampules, 1 c.c.

PROPAGANDA FOR REFORM

Alpha-Dinitrophenol—A Metabolic Stimulant.—A year has elapsed since alpha-dinitrophenol was introduced into therapeutics as a metabolic stimulant by Tainter and his collaborators of the Stanford University. Considering the potency of the drug, few untoward results or accidents have been reported. The only definite side-action from the therapeutic use of the drug is a skin rash, which occurs in about one out of every fifteen cases. The rash is uncomfortable for a few days and then disappears without sequelae. There have been no deleterious effects observed so far on the kidneys, but rather the contrary. Likewise the liver appears not to be damaged. The introduction of dinitrophenol into therapeutics has aroused widespread interest in metabolic stimulants in general, and in substitutes for this drug, in particular. Already certain British workers are proceeding to test the therapeutic actions of a related cresol. No information is at hand on the frequency of undesirable effects from this cresol, nor is its clinical toxicity or efficiency established. Therefore the dinitrocresol is still in the experimental stage and not ready for general therapeutic use. In contrast, the past year's experience with dinitrophenol has shown it apparently to be a relatively safe and reliable metabolic stimulant with which the practitioner may obtain therapeutic results. This does not mean that dinitrophenol should be given to every obese patient. In those cases in which diet has failed and thyroid is either not needed or not tolerated, dinitrophenol may be used with good prospects of benefit. However, this agent must be used only under carefully controlled conditions and with due regard for the possibility that more extensive use may bring to light as yet unsuspected toxic effect. (Jour. A. M. A., February 17, 1934, p. 542.)

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following product has been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Aloe Cold Ray Quartz Ultraviolet Lamp.—This unit consists mainly of a step-up transformer, an automatic time switch, a body grip lamp or an orificial unit both made of transparent tubing and filled with inert gases, including a drop or so of mercury. The lamp is of the low pressure mercury vapor type. The physical and electrical properties of this lamp were investigated and found to be in agreement with the manufacturer's claim, and from the standpoint of ultraviolet output the lamp complies with the Council's acceptance qualifications. The therapeutic claims recorded are also in agreement with the Council's regulations in the advertising of ultraviolet generators. A. S. Aloe Company, St. Louis, Mo. (Jour. A. M. A., April 28, 1934, p. 1382).

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Editorial

The Luminous Lady of Pirano.

We are indebted to Dr. E. C. L. Miller, Librarian of the Medical College of Virginia, for an interesting communication. Dr. Miller writes:

The newspapers have carried some accounts of the luminous lady of Pirano, but little of a scientific and reliable nature has appeared. In a letter from Italy in the July 8 issue of the *Deutsche medizinische Wochenschrift,* there is a short account of the work going on there with her.

It seems that she is now in a neurological clinic in Rome and under the supervision of a commission of the Academy of Science. Dr. Protti, of Padua, with five physicians recently made an all-night vigil with the case to observe the light. They not only saw the light but obtained photographic records of it. They were equipped with the following instruments: a portable electrocardiograph; a photoelectric cell connected through a 35-volt anode battery with a needle galvanometer that was sensitive to one ten-millionth of an ampere; a Geitel electroscope to detect stray electric currents or radioactivity in or near the body of the woman, and a moving picture camera with an especially sensitive film.

To isolate the patent from extraneous electric currents, she was placed in a Faraday chamber and the whole environment was strictly controlled to prevent any possible disturbance from hand flash-lights or other devices.

Heretofore the light has been observed only from the breast and head and to determine whether light might appear from other parts of the body, the patient agreed to sleep entirely naked.

At 10:30 P. M., April 11, 1934, while in deep sleep the patient began to moan and soon the light appeared. The moving picture camera was started and when the light ceased the film was immediately placed in a lead box for safety and taken away for development. Fifty-four of the frames showed the light; the length of exposure varying from 3/10 to 6/10 of a second.

During the time that the light appeared, the pulse-rate rose from 70 to 140 and the respiration-rate from 24 to 48 and this was followed by a period of depression. The electrocardiograph and the other instruments showed no special disturbances.

The woman, Mrs. Anna Morano, is the wife of an Istrian fisherman; she is 42 years old, the mother of twelve living sons, and she has had four miscarriages. She was married at the age of 16 and seems to be in normal health except for attacks of possibly allergic asthma, which can be avoided by sleeping in the open or by accompanying her husband on his fishing trips. It is expected that the Commission will later make a detailed report; at present there is no satisfactory theory to account for the appearance of the light.

Bioluminescence is a phenomenon common to no less than forty different orders of animals. Certain bacteria, protozoa, crustacea, worms and fish are known to possess this astonishing faculty. Slow oxidation of material within the organism usually produces the light. The phosphorescence of the sea, as is well known, is due to luminous protozoa, the luminescence of wood to certain fungi. Luminous animals may owe their ability to produce light to symbiotic luminous bacteria. The light of the candle fly is explained in this way. Is the luminous lady described by Dr. Miller the host of such bacteria? Are there certain slow oxidative processes going on

in her body capable of producing light? Has she unwittingly ingested radium and become a respository of this luminous substance, or are we dealing with one of those mysterious physical phenomena which seem to controvert the laws of nature and for the solution of which the Society of Psychical Research was founded as far back as 1882?

The A. C. S. and the A. M. A.

The American College of Surgeons affirming its interest in measures directed at a better medical service for the American people declared on June 10, 1934, that "it is the duty of the medical profession to assume leadership in this movement and take control of all measures directed to this end . . ." and that "encouragement should be given to the trial of new methods of practice designed to meet these needs. . . ." More specifically it asserted "that the periodic pre-payment plan providing for the cost of medical care of illness and injury of individuals and families of moderate means offers a reasonable expectation of providing them with more effective measures of securing adequate medical service." It went so far as to suggest "that plans for the payment of hospitalization alone without provision for payment of medical service, may be considered the first objective to be undertaken in the average community."

No one who has read the report of the Medical Service Board of the College of Surgeons to the Board of Regents could by any stretch of the imagination call it, in the light of present happenings, a radical or particular bold pronouncement. Nevertheless, it precipitated the very next day an angry resolution before the House of Delegates of the American Medical Association meeting at Cleveland: "Whereas, the Board of Regents of the American College of Surgeons, assembled in Chicago on Sunday, May 10th, promulgated a policy including a prepayment plan for medical care, restricted to the hospitals approved by the American College of Surgeons, to members of the staffs of such hospitals, and to physicians acceptable to such staffs. . . . Resolved, That the House of Delegates of the American Medical Association express its condemnation of such tactics and of this attempt of the Board of Regents of the American College of Surgeons to dominate and control the nature of medical practice to the detriment of professional ideals and the welfare of the public."

Considerable pressure was brought to bear upon the American Medical Association to bring it out into the open with a constructive program. The Michigan State Medical Society submitted the following resolution: "Whereas, there is substantial evidence that powerful forces and agencies are working toward the development of health insurance in the United States and. . . .

"Whereas the report of the Commission (sent to England by the Michigan State Medical Society to investigate health insurance) raises certain grave questions concerning the policy of the officials of the American Medical Association toward health insurance and the effects of this policy on the practising membership of the Association, . . . resolved:

"That in order to avert a repetition in the United States of the disastrous consequences that attended the adoption of health insurance in England, the Speaker of the House of Delegates of the American Medical Association appoint a committee to investigate and consider the policy of the Association toward health insurance and present a report to the House of Delegates."

The Medical Society of New Jersey declared "relative to the crisis of organized medicine" that "the parent body of organized medicine, the American Medical Association" should immediately assume "the leadership to meet the greatest threat that has ever been made to American medicine, to-wit, the menace of controlled medicine by the state." Its degelates were instructed "to use their best efforts to the end that a plan . . . to meet this emergency be forthwith promulgated through the channels of the American Medical Association."

After hearing these resolutions the House of Delegates on June 12th adopted the report of its Special Committee which after reviewing to its own satisfaction the policies and conduct of the Association up to the present moment put into the hands of the delegates a pamphlet entitled "Sickness Insurance Problems in the United States" and calmly declared that it "does not recommend any plan but has abstracted from the pamphlet the following principles and suggests that they be followed by all constituent bodies of the American Medical Association as bases for the conduct of any social experiments that may be contemplated by them."

It will be another year before the American Medical Association in convention assembled has an op-

portunity to take a more definitive stand. By that time the President of the United States probably will have given to the people of this country some type of social insurance, including old age pensions and unemployment benefits. It is to be hoped that organized medicine in this country will then know its mind well enough to be able to play a constructive part in this new and challenging field, especially in the origination of hospital and health insurance which are logical bi-products of future social legislation in this country.

In a few weeks the Medical Society of Virginia will have another opportunity to declare its position on these questions. Will it take its stand by the side of such progressive states as Michigan and New Jersey?

A New Health Commissioner.

In 1871 the Virginia Assembly yielded half-heartedly to the urgent pleas of the Medical Society of Virginia and created a State Board of Health. The members of the first Board were obliged to defray their own expenses, the Legislature having made no provision to finance their work. In spite of all the Medical Society could do it was 1893 before the State made its first monetary contribution to public health. It took a threatened epidemic of cholera in that year to bring public opinion to its aid.

With pardonable pride the medical profession of Virginia has watched the rapid expansion within recent years of the activities of this Board, now one of the most important arms of the State government. With keen concern it learns that one Health Commissioner has laid down the duties of office for another to take them up. The Department has so far been headed by men of large calibre. The Medical Society of Virginia is expecting equally fine things of the recently appointed incumbent, Dr. I. C. Riggin. Mr. Commissioner, the eyes of the medical profession are upon you.

An Honor Comes to Virginia.

The American Association of Genito-Urinary Surgeons is a select body of specialists. To become a member of it is an honor coveted by many in this country. To be made president of the organization is, of course, an even greater honor. This distinction has recently come to Dr. Robert C. Bryan, of Richmond. He has the warmest congratulations of his many friends.

Department of Clinical Education of the Medical Society of Virginia

Last Circuit of Courses in Prenatal and Postnatal Care.

Forty-one physicians enrolled in the first meetings of the tenth and last circuit of post-graduate courses conducted for the Joint Committee on Prenatal and Postnatal Instruction by Dr. Maxwell E. Lapham, of Philadelphia, its Field Clinician. Twenty-nine of them were present during the opening week, and others unavoidably detained are expected to swell the attendance in the future.

Interested members of the Alexandria and Fairfax County societies obtained the approval of their organizations and formed groups of members for the courses; again in these two instances it was demonstrated that an educational program can be most effectively organized from within. The physicians of Fredericksburg in a meeting called for special business, voted permission for the formation of a class if sufficient interest was manifested. In Culpeper and Orange counties, where no functioning medical societies existed, the courses were arranged in response to the expressed desire of almost all the doctors in the vicinity.

With these classes to be completed the middle of September the two-and-a-half-year program of the Joint Committee will come to a close. In that time fifty-five courses will have been completed with a total membership of more than 630 physicians. Fifty-four organized societies and special groups have approved this work and every center except one in which a class was offered has carried it through. Every medical society of sufficient size to justify a

course was offered the opportunity, and only four failed to take advantage of it: one voted disapproval; one resolved to inquire into the demand and nothing more was heard from it; and two in which the officers felt there was little interest did not formally act upon the courses. The Joint Committee's intensive program in one branch of practice was made available to every medical group in the State and proved its worth to all except these four in which no trial could be arranged.

The schedule of meetings for the tenth circuit, with the committees in charge and enrollments, follows:

ALEXANDRIA: The class meets on Mondays, beginning July 9th, at 3:15 P. M., in Alexandria Hospital. Local committee in charge of membership and clinical material: Dr. H. A. Latane. Enrollments: Drs. W. H. Janney, H. A. Latane, J. W. Love, S. B. Moore, Llewellyn Powell, C. W. Shaffer, W. C. Welburn, W. C. West, and W. B. Wilkins. Visitors: Drs. J. B. Anderson and Stewart McBryde.

FAIRFAX: The class meets on Tuesdays, beginning July 10th, at 2 P. M., in the Court House. Local committee in charge of membership and clinical material: Drs. W. P. Caton, Wm. Meyer, and A. L. Carson, Jr. Enrollments: Drs. F. I. Bloise, A. L. Carson, Jr., W. P. Caton, R. E. Feagans, C. F. Kincheloe, Wm. Meyer, Sigmund Newman, Alfred Palmer, B. F. Phillips, Jessie T. Scott, and E. C. Shull.

FREDERICKSBURG: The class meets on Wednesdays, beginning July 11th, at 4 P. M., in Mary Washington Hospital Nurses' Home. Local committee in charge of membership and clinical material: Drs. T. B. Payne and J. E. Cole. Enrollments: Drs. E. C. Cobb, J. E. Cole, G. B. Harrison, T. B. Payne, and E. R. Ware.

CULPEPER: The class meets on Thursdays, beginning July 12th, at 4 P. M., in the Municipal Building. Local committee in charge of membership and clinical materials: Drs. J. L. Stringfellow and O. K. Burnette. Enrollments: Drs. J. R. Boldridge, J. G. Brown, O. K. Burnette, Granville Eastham, D. W. Kelly, W. S. Quaintance, and J. L. Stringfellow.

ORANGE: The class meets on Fridays, beginning July 13th, at 3 P. M., in the Presbyterian Sunday School. Local committee in charge of membership and clinical materials: Drs. Lewis Holladay and G. R. Elliott. Enrollments: Drs. C. H. Cain, H. S. Daniel, G. R. Elliott, N. P. Fitts, J. P. Hankins, Lewis Holladay, W. C. Mason, H. C. McCoy, E. B. Pendleton, and R. M. Shelton.

Ninth Circuit Makes Best Record of Attendance

The circuit of courses in the Northern Valley was restricted to a compact area, a favorable condition which was doubtless partly responsible for the excellent attendance record of the members, the highest yet achieved. The enrollment was smaller than in any previous circuit; the attendance rate may have been favored also by a high degree of selection, inasmuch as it was the first group of courses outside of a few urban areas which failed to attract into membership at least half the physicians who were active in the practice of obstetrics and reasonably accessible to the places of meetings. The proportion of the faithful who attended without break was unusually large, nearly one-third the entire group.

The summary of enrollments and attendance for the circuit is as follows:

	Membership		*Visitors*		*Attendance*	
	No.	*Present*	*No.*	*Present*	*Aver.*	*Per Cent*
Harrisonburg	8	61	9	18	7.8	76.3
Luray	6	45	2	3	4.8	75.0
Front Royal	7	59	5	23	8.2	84.3
Woodstock	4	37	6	11	4.8	92.5
Winchester	11	84	6	6	9.0	76.4
	36	286	28	61	34.6	79.4

GEORGE W. EUTSLER,
Secretary Joint Committee,
Executive Secretary, Department of Clinical Education.

Proceedings of Societies

The Fauquier County Medical Society

Met at the home of Dr. J. E. Knight, Warrenton, June 19th. Drs. Knight and M. B. Hiden were hosts for this meeting.

The following officers were elected: President of the Society and chief of staff of the Fauquier County Hospital, Dr. Walter Gordon Trow, Warrenton; vice-presidents and assistants chiefs of staff, Drs.

Benjamin Phillips, Quantico, and J. Frank Folk, Warrenton; and secretary-treasurer, Dr. Martin B. Hiden, Warrenton (re-elected). Delegate and alternate to the State Society were also named at this time.

Mr. George W. Eutsler, University, secretary of the Committee on Pre-Natal and Post-Natal Instruction of the State Society, told of the work of this committee. However, this question was tabled and the president authorized to appoint a committee to investigate this subject further.

The following subjects were then presented: "Birth Control," by Dr. George H. Davis, Warrenton; and "The Federal Emergency Relief Administration and the Doctors," by Drs. Stewart McBryde, Manassas, and Charles B. Martin, Nokesville.

The Society went on record as indorsing birth control or the proper spacing of children whenever the family physician considers such action to the best interest of the mother or her offspring and to society in general.

The Society then adjourned for supper served by Dr. and Mrs. Knight.

The Patrick-Henry Medical Society

Held its regular quarterly meeting on July 5th, at Martinsville, Va. Dr. M. A. Johnson, Jr., of Roanoke, was the invited guest for the evening.

Delegates and alternates to the State Society meeting were named at this time.

A resolution was passed that this Society would go on record as opposed to the admission of patients to our State Institutions for medical and surgical care without a letter of introduction from their family physician and a statement of the fact that they are unable to pay for such care.

The Society decided to take no action on the scale of fees suggested by the Medical Advisory Board of the F. E. R. A., for those cases on the Federal Relief rolls.

A banquet, served at the Broad Street Hotel, preceding the meeting, was enjoyed by all.

C. R. TITUS, *Secretary.*

Amelia County Medical Society.

At a meeting of this Society held at Amelia Court House on July 10th, the following officers were elected: President, Dr. J. M. Habel, Jetersville, and vice-president and secretary-treasurer, Dr. J. L. Hamner, Mannboro. Delegate and alternate to the Alexandria meeting of the State Society were also elected at this time.

News Notes

Virginia State Board of Medical Examiners.

There were only three failures out of the large number of applicants before the June meeting of the Virginia State Board of Medical Examiners. The following received certificates to practice medicine in Virginia:

Dr. Alfred Abramson, Alexandria, Va.
Dr. Robert Syer Barrett, Smithfield, Va.
Dr. Robley Dunglison Bates, Jr., Newtown, Va.
Dr. Chester Markel Becker, Columbia, Pa.
Dr. George Simmerman Bourne, Wytheville, Va.
Dr. John Newton Bowden, Red Hill, Va.
Dr. Leland Coffey Brown, Hinton, W. Va.
Dr. Harry Paul Browning, University, Va.
Dr. William A. Brumfield, Jr., Halifax County, Va.
Dr. William Fielding Bryce, Jr., Richmond, Va.
Dr. Clarence Ivanhoe Butte, Jr., Matoaka, W. Va.
Dr. Charles Lorraine Cabell, Richmond, Va.
Dr. George Robert Carpenter, Brookneal, Va.
Dr. Richard Reading Chamberlain, Maplewood, N. J.
Dr. Clarence Conway Chewning, Jr., Chilesburg, Va.
Dr. Franklin Harry Cohen, Norfolk, Va.
Dr. Walter Franklin Cole, Newport News, Va.
Dr. William Clark Cooper, Langley Field, Va.
Dr. Joseph Edwin Cox, Waynesboro, Va.
Dr. Virgil Jefferson Cox, Peach Bottom, Va.
Dr. James Dean Cregar, Pulaski, Va.
Dr. Charles Fallon Davis, Jr., Roanoke, Va.
Dr. Richard Earle deButts, Upperville, Va.
Dr. William Frederic Delp, Rural Retreat, Va.
Dr. Charles Prengrey Dickerman, Chicago, Ill.
Dr. Julian Booth Doss, Penhook, Va.
Dr. Maurice Britton King Edmead, St. Kitts, B. W. I.
Dr. William Clegg Eversole, University, Va.
Dr. George Taylor Flesher, Ravenswood, W. Va.
Dr. Mildred Brynberg Forman, Elsmere, Del.
Dr. Major Schuessler Foster, Roanoke, Ala.
Dr. Joseph Edward Gladstone, Jr., Exmore, Va.
Dr. Harry Lewis Glass, Carteret, N. J.
Dr. Howard Clark Glover, Newman, Ga.
Dr. Noble Maxwell Goodloe, Staunton, Va.
Dr. Franklin Heywood Goodwin, Clifton Forge, Va.
Dr. James Harrison Gordon, Richmond, Va.
Dr. Milford Martin Greenbaum, New York, N. Y.
Dr. Walter Douglas Hankins, Johnson City, Tenn.

Dr. Cecil Curtis Hatfield, Saltville, Va.
Dr. George Alfred Hess, Bridgewater, Va.
Dr. William Rollan Hill, Statesville, N. C.
Dr. Edward M. Holmes, Norfolk, Va.
Dr. Horace Dunbar Hoskins, Saluda, Va.
Dr. Clara Lucille Hoye, Louisa, Va.
Dr. Grey Carlton Hughes, Axton, Va.
Dr. Joseph Leigh Hundley, Callands, Va.
Dr. John Omohundro Hurt, Roanoke, Va.
Dr. William Riley Hutchinson, Boomer, W. Va.
Dr. John Leonard Jennings, Jr., Danville, Va.
Dr. William Allen Johns, Farmville, Va.
Dr. Walter Winston Johnson, Jr., Covington, Va.
Dr. Brock Darden Jones, Jr., Holland, Va.
Dr. Frank Woodson Jones, Oak Hill, W. Va.
Dr. George Louis Jones, Ridgeway, Va.
Dr. James Paul Kent, Wirtz, Va.
Dr. William Virginius King, Jr., Thornhill, Va.
Dr. Israel Maurice Kruger, Norfolk, Va.
Dr. Jasper Herman Lamm, Lucama, N. C.
Dr. James F. Lane, Charlottesville, Va.
Dr. Vincent Edward Lascara, Norfolk, Va.
Dr. Armando Joseph Lauritano, New York, N. Y.
Dr. Lewis Littlepage, Jr., Norfolk, Va.
Dr. William Samuel Lloyd, Bumpass, Va.
Dr. Luther Burton Lowe, Roanoke, Va.
Dr. George Winford McCall, Richlands, Va.
Dr. Lewis Walke McIlhany, University, Va.
Dr. Arthur Seldon Mann, Jr., Elizabeth City, N. C.
Dr. Richard Campbell Manson, Richmond, Va.
Dr. James Calvin Martin, Roanoke, Va.
Dr. John Robert Massie, Jr., Perkinsville, Va.
Dr. Emmett Carlysle Matthews, Richmond, Va.
Dr. Lemuel Edward Mayo, Jr., Portsmouth, Va.
Dr. William M. Moir, Roanoke, Va.
Dr. Robert Sterling Montgomery, South Hill, Va.
Dr. Kermit Jackson Moore, Cambria, Va.
Dr. William Perry Moore, Jr., Norfolk, Va.
Dr. Hugh Page Newbill, Norfolk, Va.
Dr. Irwin Matthew Nuckols, Richmond, Va.
Dr. Clyde Garvice O'Brien, Appomattox, Va.
Dr. Philip Wood Oden, Remington, Va.
Dr. Charles Collins Orr, Jr., Asheville, N. C.
Dr. Lawrence James Pace, Harrisonburg, Va.
Dr. Edwin James Palmer, Richmond, Va.
Dr. Roy Glenn Parks, Hopeton, Va.
Dr. Pietro Nicolino Pastore, Bluefield, W. Va.
Dr. Isaac Nathan Patterson, Swedesboro, N. J.
Dr. Thomas Bryant Pope, Drewryville, Va.
Dr. William Ribble Pretlow, Chester, Va.
Dr. William Gilmer Puryear, South Boston, Va.
Dr. George Howard Quillen, Roda, Va.
Dr. George A. Reynolds, Bluefield, Va.
Dr. Chester Loris Riley, Martinsburg, W. Va.
Dr. Chaffee Aldred Scarborough, Franklin, Va.
Dr. Jamie Pleasant Scott, Stone Mountain, Va.
Dr. Mack Irvin Shanholtz, Winchester, Va.
Dr. James Robert Shanklin, Gary, W. Va.
Dr. Jerome Joseph Shapiro, Richmond, Va.
Dr. Reynold Clinton Siersema, New York, N. Y.
Dr. Sam Silver, Richmond, Va.
Dr. Harry Anthony Smith, Wheeling, W. Va.
Dr. John Harris Smith, Copper Hill, Va.
Dr. Richard Henry Smith, Stapleton, N. Y.
Dr. Eric Gordon Stewart, Trinidad, B. W. I.
Dr. Harry Benjamin Stone, Jr., Roanoke, Va.
Dr. William Joshua Sturgis, Jr., Nassawadox, Va.
Dr. Robert Vaughan Terrell, Richmond, Va.
Dr. John Hansford Thomas, Jr., Greenville, Va.
Dr. Frederick Nimrod Thompson, Richmond, Va.
Dr. Girard Vaden Thompson, Chatham, Va.
Dr. Elam Cooksie Toone, Jr., Richmond, Va.
Dr. William Edgar Waddell, Jr., Lexington, Va.
Dr. Rowland Haldane Walker, Jr., Norfolk, Va.
Dr. Robert Fletcher Watson, University, Va.
Dr. Sol Charles Werblow, Newport News, Va.
Dr. Everett Carlton White, Newport News, Va.
Dr. John William Whitlock, Charleston, W. Va.
Dr. Henry Wilson Williams, Washington, D. C.
Dr. Hudson Mason Wingfield, Ashland, Va.
Dr. Fletcher Johnston Wright, Jr., Petersburg, Va.

The following were awarded certificates by reciprocity:

Dr. William Stone Blakeston, St. Mary's County, Md.
Dr. Vincent Joseph Dardenski, Westfield, Mass.
Dr. Fred Wells Granger, Brockton, Mass.
Dr. Benjamin S. Hanna, Baltimore, Md.
Dr. Francis Newby Mullen, Jr., South Mills, N. C.
Dr. William Wilson Pierce, Suffolk, Va.
Dr. John Cheatham Wallace, Bentonia, Mass.
Dr. Harold Roosevelt Waring, Tyren, Pa.

Our Alexandria Meeting.

Time is rapidly approaching for our sixty-fifth annual meeting in Alexandria, the dates for which are October 9th, 10th and 11th. The doctors there are much interested and wish this meeting to be a success. We hope our members generally will do their part by attending and taking part in the discussions. A preliminary program will appear in the September issue of the MONTHLY.

Married.

Dr. Paige E. Thornhill, Norfolk, Va., and Miss Marianne E. Avery, Watertown, N. Y., June 16th, at Towanda, Pa.

Dr. William J. Ellis, Covington, Va., and Miss Bessie Virginia Withrow, Clifton Forge, Va., June 8th.

Dr. J. Gordon Rennie and Miss Anne Marie Lund, both of Petersburg, Va., June 27th.

Dr. Robert Hough Jordan, Beckley, W. Va., and Miss Mary Edith Faulkner, Urbanna, Va., June 30th. Dr. Jordan is a graduate of the Medical College of Virginia, class of '33, and recently completed an internship at the C. & O. Hospital, Huntington, W. Va.

Dr. Andrew Muncy Groseclose, Roanoke, Va., and Miss Mary Katherine McLaughlin, Richmond, Va., July 5th.

Dr. Charlie Frank Manges and Mrs. Susie Robinson Ware, both of Blacksburg, Va., July 2nd.

Dr. John Marshall Winkfield, class of '32, Medical College of Virginia, and Miss Mary G. Boland, Reading, Pa., July 2nd. Dr. Winkfield has recently completed a residency at St. Joseph's Hospital, Reading, Pa., and will be located for practice at Strasburg, Va.

Dr. Thomas C. Lawford and Miss Doris Louise Petty, both of Hilton Village, Va., July 7th. Dr. Lawford is a grade of the University of Virginia, Department of Medicine, in 1929, and served his internship at the Orange Memorial Hospital, Orange, N. J.

Dr. John Sasser McKee, Jr., Morgantown, N. C., and Miss Betty Ambler McGill, Appomattox, Va., June 30th.

Dr. William Mayer Robinson, Richmond, Va., and Miss Bluma Dolinsky, Chicago, Ill., May 27th. Dr. Robinson is a graduate of the Medical College of Virginia, class of '32, and served his internship at Memorial Hospital, Richmond.

Dr. L. P. Bailey,

Medical College of Virginia, class of '33, recently completed his internship at White Cross Hospital, Columbus, Ohio, and has opened an office for general practice at Nathalie, Virginia.

Dr. L. B. Todd

Has located for practice at Quinwood, W. Va., where he is associated with Dr. Leech. He is a member of the class of '32, Medical College of Virginia, and served a two-year internship at the Hospital Division of the College.

Dr. Paige E. Thornhill.

At the meeting of the American Medical Association in Cleveland, Dr. Thornhill, of Norfolk, was among fifty new men certified by the National Board as qualified specialists in obstetrics and gynecology. This board is made up of nine men, three each from the Obstetrical Section of the A. M. A., the American Gynecological Society, and the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. They have been functioning for five years and less than five hundred men have thus far been certified in this field.

Dr. H. C. McCoy

Has located for general practice at Gordonsville, Va. He is associated with Dr. W. C. Mason. Dr. McCoy is a graduate of the University of Virginia, Department of Medicine, class of '33, and has recently completed a rotating internship in surgery at the University Hospital.

Dr. J. L. Kinzie,

Class of '33, Medical College of Virginia, has located at Salem, Va., for the practice of General Medicine. Following his graduation, he served as resident physician at Sheltering Arms Hospital, Richmond.

News Notes from the Medical College of Virginia.

Dr. A. M. Ambrose, of New York, is now working at the college with Dr. H. B. Haag, professor of pharmacology, doing investigative work in the chemical and pharmacological study of various insecticides. It is believed that this work will lead to the development of an insecticide of great practical value and one which will prove a harmless substitute for those containing lead, or arsenic.

This work has been made possible through a grant to the college from the United States Department of Agriculture, Bureau of Chemistry and Soils. Dr. Ambrose has as his assistant in the laboratory Mr. W. N. Cunningham also of the Department of Agriculture. The grant for this work will make possible one year's intensive research by Dr. Ambrose.

Dr. C. J. Kennedy, '31, was a recent visitor to the college. Doctor Kennedy is now established in New York for the practice of psychiatry.

Dr. W. G. Crockett, professor of pharmacy, attended the recent meeting of the Virginia Pharmaceutical Association at Hot Springs, Virginia.

The outpatient department report for the month of June shows 5,531 visits to the clinic during the month.

Dr. J. B. Mears,

A medical director in the U. S. Navy, has been transferred from the U. S. Naval Hospital, League Island, Philadelphia, to Ninth Naval District, Great Lakes, Ill. Dr. Mears is an alumnus of the University of Virginia and has been a member of the Medical Society of Virginia for a number of years.

Dr. Llewellyn Powell,

Alexandria, Va., was elected president of the Alexandria Tuberculosis Association, at its annual meeting, held recently, succeeding Dr. H. A. Latane.

Dr. George W. Booth,

Who has been practicing for sometime at Ferrum, Va., has moved to Rocky Mount, Va., where he is still engaged in general practice.

The American College of Physicians

Will hold its nineteenth annual Clinical Session in Philadelphia, April 29-May 3, 1935.

Announcement of these dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings.

Dr. Jonathan C. Meakins, of Montreal, Que., is President of the College, and will arrange the program of General Sessions. Dr. Alfred Stengel, Vice-President in Charge of Medical Affairs of the University of Pennsylvania, has been appointed General Chairman of local arrangements, and will be in charge of the Program of Clinics. Mr. E. R. Loveland, Executive Secretary, 133-135 S. 36th Street, Philadelphia, Pa., is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming Session.

Drs. McCoy and Stokes.

Drs. C. M. McCoy and P. B. Stokes have opened an Eye, Ear, Nose and Throat Hospital in Norfolk, Va. Both doctors recently practiced in North Carolina and for the last two and one-half years have been in New York and Europe, specializing in their fields.

Dr. E. L. McQuade,

Recently health officer for Charlottesville, University and Albemarle County, Va., has been appointed Director of the State Department of Rural Health. He became associated with the Virginia Health Department following his graduation in 1927. Dr. McQuade received a fellowship appointment to Johns Hopkins in 1930 and while there was awarded his doctor of health degree. He came to Charlottesville in 1931.

Sheltering Arms Hospital to Discontinue Nursing School.

The Sheltering Arms Hospital, Richmond, will discontinue its nursing school temporarily after September 1st. The school is being discontinued as a financial measure and in accordance with the plans pursued by a number of Virginia hospitals in an effort to increase employment among nurses.

Dr. A. D. Hutton,

Marion, was recently installed as treasurer of the Marion Rotary Club.

Dr. Malcolm D. Foster,

Class of '33, Medical College of Virginia, who recently completed his internship at St. Luke's Hospital, Richmond, Va., has located at Elkton, Va., for general practice.

George W. Eutsler,

Associate Director of the Extension Division of the University of Virginia, who has acted in a secretarial capacity for the Medical Society's Department of Clinical Education and its subsidiary agency, the Joint Committee on Prenatal and Postnatal Instruction, since their beginnings in 1929 and 1931, has obtained a year's leave of absence to accept a position as director of the Holston Valley Community Hospital in Kingsport, Tenn.

The duties of the position will begin in August when the new hospital will have been under construction for two months. The hospital is unique in the fact that from the outset it will institute a plan of prepaid group hospitalization as a means of stabilizing the finances of the institution and of making its services more readily available to the people of its territory.

Dr. F. O. Fay,

Class of '30, Medical College of Virginia, has located at Wilmington, N. C., where he is associated with Dr. J. D. Freeman. Dr. Fay served his internship at the Hospital Division of the Medical College of Virginia and has also been serving a residency in Ophthalmology.

Dr. H. C. Jones,

Petersburg, has been elected as one of the three new directors of the Petersburg Chamber of Commerce.

Dr. John A. M. Thompson

Has located at Sanatorium, Va., where he is connected with the State Board of Health at the Blue Ridge Sanatorium. He is a member of the class of '33, University of Virginia, Department of Medi-

cine, and recently completed his internship at the University Hospital.

Dr. H. R. Butt,

Class of '33, University of Virginia, Department of Medicine, has recently completed his internship at St. Luke's Hospital, Bethlehem, Pa. He is now at the Mayo Clinic, Rochester, where he has a fellowship in Medicine.

Medical Society of Virginia, Maryland and the District of Columbia.

At a recent meeting of this Society, the following officers were elected: President, Dr. R. Arthur Hooe; vice-president, Dr. William P. Herbst; recording secretary, Dr. Harry F. Davies; corresponding secretary, Dr. A. Magruder MacDonald; and treasurer, Dr. Robert Scott Lamb. All of the officers are from Washington, D. C.

General Hospitals Caring for Tuberculous.

General hospitals are opening their doors to tuberculosis cases, increasing facilities are being provided for the care of tuberculous children, and 6,863 new beds for treatment of the disease have been added to the nation's public health armament despite the depression, according to facts revealed by a three-year survey of tuberculosis sanatoria throughout the United States just completed by the National Tuberculosis Association.

There are now available for tuberculosis patients in the United States sixty-four Federal institutions containing 11,431 beds; 357 state, county and municipal institutions containing 56,940 beds; seventy-three private institutions containing 4,344 beds; 165 semi-private institutions containing 14,202 beds. These figures do not include provision made in day camps or in summer preventoria.

The reports indicate a considerable increase in the provision made for children in sanatoria throughout the country. A number of institutions which have not previously admitted children now report a definite number of children's beds, and several institutions have added new buildings exclusively for children.

Doctors on Committees in Rotary Clubs.

Among those noted as being appointed on committees in Rotary Clubs for the coming year are Drs. J. C. Bodow and Oliver L. Jones in the Hopewell Club, and Drs. H. C. Jones and W. P. Hoy in the Petersburg Club

Obituary Record

Dr. William Blount Barham,

Perhaps the oldest member of the Medical Society of Virginia in point of continuous membership, died at the home of his daughter, Mrs. James A. Grizzard, Drewryville, Va., April 24th. He was eighty-two years of age and graduated in medicine from the University of Pennsylvania in 1877. He practiced his profession in Newsoms, Va., for more than fifty years and was a fine type of the old-time country doctor. He had held many positions of honor in his section and was a member of numerous medical associations. He was also an outstanding Mason, and his funeral was held with Masonic rites. Two daughters survive him.

Dr. Montgomery Thomas McCulloch,

Elkton, Va., died July 14th. He was drowned while fishing alone and it is believed he stepped off a ledge into deep water and was unable to swim out. Dr. McCulloch was fifty-four years of age and a graduate of the Medical College of Virginia in 1907. He had practiced at Troutville, Va., before coming to Elkton six years ago. Dr. McCulloch has been a member of the Medical Society of Virginia for twenty-five years, and had served on its Council for several years. His wife survives him.

Dr. Robert Lee Wilkins.

WHEREAS, The Alexandria Medical Society has learned with profound sorrow of the death of Dr. Robert Lee Wilkins, one of its oldest members, and,

WHEREAS, Dr. Wilkins was formerly president and an active member of the Alexandria Medical Society, and,

WHEREAS, Dr. Wilkins has given a long and faithful service to the people of this community,

Be it resolved, That in the death of Dr. Wilkins the Alexandria Medical Society has lost one of its most faithful members, and this community has lost an earnest and sincere worker from the ranks of its medical practitioners, and,

Be it further resolved, That a copy of these resolutions be spread upon the minutes of the Society, and a copy be sent to his widow and to the VIRGINIA MEDICAL MONTHLY.

LLEWELLYN POWELL,
J. W. LOVE,
W. CLYDE WEST,
Committee.

Dr. Benjamin B. Dutton,

Prominent physician of Middlesex County, Va., died suddenly of heart trouble at his home "Hart-

field," July 6th. He was eighty-three years of age and graduated from the former Washington University School of Medicine, Baltimore, in 1872. Dr. Dutton is survived by his wife, one daughter and two sons, one of whom is Dr. B. B. Dutton, Winchester.

Resolutions on Dr. William Francis Cooper.

WHEREAS, On May 20, 1934, Dr. William Francis Cooper passed to his reward:

Be it resolved, That the staff of the Riverside Hospital has lost a valuable member. He was one of the founders of the Riverside Hospital, having contributed greatly in many ways toward the development of the Hospital.

In his profession he was respected by all, and especially loved by his patients.

It was characteristic of him at all times, to give courage and help to the younger members of the profession.

The staff of the Riverside Hospital senses with a deep feeling of regret, the passing of this beloved member.

Be it resolved further, That the members of this staff convey their deepest sympathy to his family, and a copy be published in the VIRGINIA MEDICAL MONTHLY.

SAMUEL DOWNING,
B. R. GARY,
Committee.

WHEREAS, On May 20, 1934, Dr. William Francis Cooper passed to his reward:

Be it resolved, That the Warwick County Medical Society has lost one of its oldest members, one who was constant in attendance.

He loved the Society next to his church, and did his part to keep it alive in days gone by when a true and loyal member counted for much.

He was a valuable member of the Medical Society of Virginia, for some forty years, never missed many meetings, serving on various committees and at one time vice-president. He served in various positions of trust, being at one time Health Officer and at another Quarantine Officer of the Port; serving as director in banks and other financial institutions.

In his practice of medicine he stuck to fundamentals and was a stone wall against the untried and unreal. He had a smile for everybody, and always greeted one with a personal warmth which was characteristic.

He was for a number of years, until his death, a deacon in the First Baptist Church; to this office he was faithful and truly did he fall with the armour on.

Be it resolved further, That the members of this Society convey their deepest sympathy to his family, and a copy be published in the VIRGINIA MEDICAL MONTHLY.

CLARENCE PORTER JONES,
G. P. HANKINS,
SAMUEL DOWNING,
Committee.

Dr. Chester A. Amos.

WHEREAS, The Master has seen fit to remove from our midst one of our most useful members in the death of Dr. Chester A. Amos, and,

WHEREAS, Dr. Amos, with untiring energy and boundless charity, served the people of this community for many years,

Be it resolved. That in the death of Dr. Amos the Alexandria Medical Society has lost one of its most useful members, and the community a capable, energetic and charitable friend, and,

Be it further resolved, That these resolutions be spread on the minutes of the Society, and copies sent to his widow and to the VIRGINIA MEDICAL MONTHLY.

LLEWELLYN POWELL,
J. W. LOVE,
W. CLYDE WEST,
Committee.

Dr. Hanson Slaven Ogilvie,

Asheville, N. C., died March 22nd. He was fifty years of age and a graduate of the Medical College of Virginia in 1909.

Dr. Dudley Henry Morris,

University, Va., died March 29th, at the age of forty-nine. He was a graduate of Columbia University College of Physicians and Surgeons, New York, in 1909.

Dr. Elisha William Lister,

Elizabeth City, N. C., died May 1st. He was sixty-two years of age and graduated in 1896 from the Medical College of Virginia.

Dr. Gregorio M. Quiteras,

Yeadon, Pa., died July 5th, at the age of seventy-one years. He was well known for his work to rid the Southern States of yellow fever.

Mme. Marie Curie,

Co-discoverer of radium, died on July 4th, in Sallaches, France. She had for many weeks been under treatment at a sanatorium for an anemic condition. Mme. Curie was honored by countless governments and societies as one of the most distinguished scientists and women of all time, and the Nobel prize in chemistry had been awarded her twice. She was the first woman to be elected to the French Academy of Sciences.

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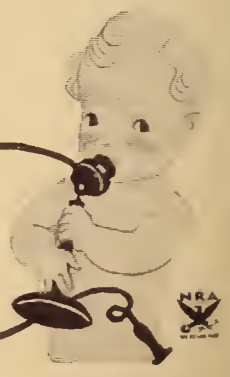
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Va. Society of O. L. & O.	B. R. Kennon, Norfolk	G. G. Hankins, Newport News	Spring 1935.
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MEDICAL PROGRESS

Some time ago the Editor submitted to several American internists this question: "What do you consider the three greatest achievements of medicine (as distinct from surgery and the specialties) during the past ten years?" The MONTHLY believes that its readers will be interested in the answers received:

1. A better knowledge of dietary deficiencies as exemplified most conspicuously in pernicious anemia;
2. The injection of toxin-antitoxin mixtures for the prevention of diphtheria;
3. A fuller knowledge of the function of the endocrine glands illustrated, for instance, by the precise diagnosis and successful operative treatment of certain disorders of the parathyroid and suprarenal glands.

—Louis Hamman, *Johns Hopkins University,* Baltimore, Md.

1. The discovery of liver treatment of pernicious anemia with its subsequent stimulation of the study of blood diseases;
2. The advances made in the treatment of pulmonary tuberculosis by surgical means;
3. The isolation of parathormones by Collip, and the subsequent stimulation of the investigation of internal glandular hormones.

—L. F. Warren, *Long Island College of Medicine,* Brooklyn, N. Y.

1. Insulin for the treatment of diabetes;
2. The use of liver in the treatment of anemia;
3. The discovery of Cortin, the hormones from the adrenal cortex.

—Walter W. Palmer, *College of Physicians and Surgeons,* New York, N. Y.

1. Discovery of the cure of pernicious anemia, together with the new field this work opens up;
2. Present-day knowledge of female sex hormonology;
3. Isolation of the adrenal cortex hormone.

—James H. Means, *Massachusetts General Hospital,* Boston, Mass.

1. The use of liver for the treatment of pernicious anemia is of basic importance, not only because of the therapeutic results, but because indirectly it leads to Castle's magnificent contribution concerning the mechanism of the production of this disease;
2. The rationalization of endocrinology and the very vast accumulation concerning the glands of internal secretion that have come from various laboratories.
3. The generalized use of toxoid in the preven ion of diphtheria.

—J. H. Musser, *Tulane University,* New Orleans, La.

1. Insulin for diabetics;
2. Liver for pernicious anemia cases;
3. The use of proper vitamin diets in pellagra, especially the liver diet, will rank in time as the third great achievement.

—Frederic M. Hanes, *Duke University,* Durham, N. C.

1. The discovery of the cortical hormone of the adrenal gland by Kendall;
2. The use of liver in pernicious anemia by Minot and Murphy.
3. The discovery of the method of onset of granulocytopenia, the causes of the disease, and the large place that related leukopenias occupy in medicine.

—Stewart R. Roberts, Atlanta, Ga.

1. The work of Minot, Murphy, Castle and others on the relation of diet to Addison's anemia;
2. The work of Avery and his co-workers on the pneumococcus, particularly the study of the specific capsular carbohydrates;
3. The advances in knowledge of the glands of internal secretion such, for example, as the parathyroids. These advances have been brought about by many workers.

—C. Sidney Burwell, *Vanderbilt University,* Nashville, Tenn.

FACTS AND THEORIES OF ADRENAL FUNCTION.*

S. W. BRITTON, B. S., M. D.,
University, Va.
Professor of Physiology, University of Virginia

Nearly a quarter of a century ago Cannon began a series of investigations on the adrenal glands which profoundly affected not only endocrinological research but developments throughout the field of physiology. Results which have accrued from his experiments have involved new concepts of cardiac activity and blood pressure, of carbohydrate and general bodily metabolism, of body temperature and the natural defenses of the organism, and more recently of autonomic nerve functions and the important mechanisms for bodily stabilization (Cannon).[1] It was perhaps not altogether unfortunate that the first brilliant experiments of Cannon on gastro-intestinal functions, begun about thirty-five years ago, should give place to research in the field of internal secretions and to adrenal investigations in particular.

The Adrenal Medulla. Certain fairly well-established facts with regard to the function of the adrenal medulla may be briefly mentioned. That the medullary tissue is not immediately essential to life is now well recognized. Animals appear to survive indefinitely following its removal, although not without evident functional disabilities. Some degree of compensatory restitution may eventually be established; the considerable importance of the medulla in the maintenance of normal bodily relationships nevertheless appears evident. It should be observed that sympathetic nerve impulses act perhaps invariably in conjunction with the adrenal medulla. While nervous action is probably initiatory in character, hormonal activity apparently tends to prolong and sustain the nervous influence.

In connection with the regulation of carbohydrate metabolism, particularly important functions are mediated through the agency of the adrenal medulla. Liberation of glucose by the liver is a notable and normal function of the medullo-adrenal hormone. It also appears that under at least some conditions, glycogen degradation in muscle is accelerated by adrenin discharge or the injection of adrenalin (Cori).[2] While a decrease in liver glycogen may thus be evident early in an experiment, there may later occur an augmentation, due apparently to hepatic formation of glycogen from lactic acid. The effects on circulatory activities need no elaboration; blood pressure and cardiac responses to extremely minute doses of adrenalin have been well demonstrated. An interesting case is the acceleration of the heart by one part of adrenalin in 1,400,000,000 of blood! (Anrep and Daly).[3]

Evidence also indicates that body temperature and tissue oxidations are greatly influenced by the supply of adrenin which is normally delivered to the blood stream. The chemical phase of body temperature regulation appears to be chiefly subserved, indeed, through medullo-adrenal activities. Cold is a very marked stimulant to adrenin secretion, and the calorigenic action of adrenalin has, of course, been long known.

Sympathin: Emergency Theory. Work of the past few years which has been carried out at Harvard indicates that excitation of the sympathetic system, which normally acts in co-operation with the adrenal medulla, releases a substance into the blood stream, which has been named "sympathin," apparently at the nerve endings in smooth muscle (Cannon and Rosenblueth).[4] This material acts apparently in a manner similar to the adrenal medullary secretion (although some exceptions have been noted), and the possibility of vicarious or compensatory reactions being mediated through sympathetic agencies can therefore be appreciated. It is worthy of note, however, that even the sympathetic system along with the adrenal medulla may be eliminated without bringing about death of the animal. The bodily exchanges in such a case show again many insufficiencies, particularly under conditions of emergency or stress.

The emergency theory of medullo-adrenal function proposed several years ago by Cannon has been supported by an overwhelming weight of evidence in recent years. The theory points out that in fear, rage and other emotional displays, the respiration

*Abstract of an address given at a meeting of the Richmond Academy of Medicine, April 24, 1934.

is increased, blood pressure rises and the heart beats more rapidly; gastro-intestinal activities are inhibited and blood is shunted to laboring muscles from the abdominal viscera, including the spleen; glucose is supplied to the blood from the hepatic glycogen reserves, and blood is also rendered more coagulable. These interwoven, protective reactions are brought about particularly, it has been established, through the medullo-adrenal mechanism acting in co-operation with sympathetic nerve discharges. From further work it appears that the adrenal medulla becomes operative and effective, indeed, in all conditions involving motion and emotion, at least in animals.

The older "tonus theory" of Elliott, discarded for many years, may perhaps be harmonized to some extent with the emergency theory. Reduction of arterial pressure, which is said to follow adrenal ligation, indicates that if adrenin is not actually continuously secreted, it is probably discharged into the blood stream with a rapid intermittency which approximates continuity, and thus tends to affect continuously the arterial pressure and other activities in the organism (see Cameron).[5]

Thus the adrenal medullary mechanism, in conjunction with sympathetic nerve impulses, besides sustaining and fortifying the individual in the contingencies of life, serves to maintain a "comfortable constancy" or "homeostasis" (Cannon) in the internal environment throughout the major period of the individual's routine existence.

The Adrenal Cortex. The problem of the function of the adrenal cortex has baffled the concerted attacks of investigators for many years. That such a very small amount of glandular tissue as is represented by the adrenal cortex—about 1/3000th of the body weight—should be so exceedingly vital to the organism scarcely seems credible. Poor operative technique was commonly blamed for the high mortality rates following adrenalectomy, but this can no longer be urged. There are many indications which appear shortly after the operation that animals subjected to complete adrenalectomy are doomed to early death, although the surgical procedures may have been blameless. Tested by condition and survival of the animal after operation, none of the smaller glandular tissues in the body can be considered so vitally important as the adrenal cortex.

Adrenal Insufficiency. Animals with obvious symptoms of adrenal insufficiency (muscular weakness and, later, convulsions) which usually appear five to seven days after adrenalectomy, show notable blood-chemical and other bodily changes. There is almost invariably a high blood urea and non-protein nitrogen, reduced serum sodium and chlorides and blood sugar, and an almost complete disappearance of liver glycogen. Blood pressure and circulating blood volume are usually low, and correlatively the blood is concentrated and the red cell count is much increased. There are reductions in the white cell counts, however, and comparison of the condition to "agranulocytosis" has been recently made (Corey and Britton).[6]

Although many workers have stated that the adrenalectomized animal becomes markedly dehydrated, this appears true only as regards the blood; liver and muscle tissues particularly are hydrated, and the operated animal as a whole appears to contain, indeed, more water than normal. Pathological lesions in the gastro-intestinal tract, pancreas and other tissues, which are found at autopsy, have not been shown to have any specific significance.

It is undoubtedly true that adrenalectomized animals die from loss of cortical and not medullary tissues. Medullo-adrenalectomy is not fatal, but death is said to result from cortical removal alone. Adrenalin administered to dying adrenalectomized animals brings about only temporary relief, probably by circulatory redistribution and augmentation of blood glucose. The cortico-adrenal hormone alone—without adrenalin—maintains completely adrenalectomized animals in apparently good health. It may be remarked that the evidence indicates, however, that the life-maintaining hormone is to be found in rather significant amount not only in the cortical but also in the medullary tissues.

Cortico-Adrenal Extracts. Development within the past few years of potent cortico-adrenal extracts, by Swingle and Pfiffner, at Princeton,[7] and by Hartman, at Buffalo ("cortin"),[8] has remarkably stimulated investigations on the function of the adrenal cortex. The preparations are made up in aqueous solution following (usually) alcoholic, acetone or ether extraction. There is no doubt that these extracts contain the hormone essential to life; completely adrenalectomized animals may be kept alive indefinitely when suitable doses are employed,

starting with rather large amounts immediately after operation. Their action in cases of adrenal insufficiency is not as rapid but otherwise equally as striking as, for example, glucose injections on insulin hypoglycemia.

The convulsions of adrenal insufficiency (in rats, cats and other animals) disappear in fifteen to twenty minutes after extract injection, and in an hour or so an animal may sit up and take food. The material is effective not only by all the ordinary routes of injection, but also when given by mouth in three to five times the subcutaneous dosage (Britton, Flippin and Silvette).[9] The oral route has proved particularly effective in young animals, in which recovery from convulsions to normal in less than an hour after administration of the extract has been observed. A "dog unit" has been used by Swingle and Pfiffner. In our hands the potency of a batch of extract has been much more simply tested on operated cats, or on completely adrenalectomized young rats, either by the growth method or by restoration from severe adrenal insufficiency.

Extracts are now being made in many countries throughout the world, although in numerous cases the substances which are prepared are obviously of low potency and sometimes toxic because of phenolic decomposition products of adrenalin and other contaminating materials. The methods of extraction are still expensive, and long and difficult.

Theories of Cortical Function. Investigation of the problem of cortico-adrenal function has been given a new impetus with the development of effective extracts. Recently the attention of a wide group of investigators has been given to a determination of the physiological action of these preparations. Whether the results indicate the action of the hormone itself is a matter of conjecture, but one may recall in this connection that insulin has not yet been chemically isolated. Several years ago the theory was put forward from this laboratory (Britton)[10] that the adrenal cortex was probably chiefly concerned in the normal organism in the regulation of carbohydrate metabolism. Conditions observed in the completely adrenalectomized animal—the exhaustion of liver glycogen, low muscle glycogen, marked hypoglycemia and convulsions similar to those following insulin injection—now indicate that carbohydrate insufficiencies play a major rôle in bringing about death after adrenal removal.

In the case of no post-operative condition which involves the carbohydrate-regulating mechanisms of the body, e. g., in pancreatectomy or in hepatectomy, does the animal die with more profound indications of carbohydrate disturbance. Many tests carried out on adrenalectomized animals show indeed that carbohydrate metabolism is profoundly and probably primarily affected because of cortical removal. The effects of the extract on adrenalectomized and on normal animals, i. e., on blood sugar and liver and muscle glycogen, support furthermore the carbohydrate theory of cortico-adrenal function.

The theory proposed by the Princeton workers that cortico-adrenal function is concerned chiefly in blood-volume regulation is not tenable according to recent results, although the suggestion that salt and water metabolism is controlled by the cortex has some evidence in its favor. Changes in tissue and serum sodium and chloride observed by us in adrenalectomized animals are, however, not incompatible with life; they have, in fact, been produced to a similar extent in other experimental conditions without apparent detriment to the animal (Silvette and Britton).[12] This contrasts with the observation that the carbohydrate deficiencies which supervene after adrenal ablation are in themselves fully sufficient to produce death. Hartman's theory that the adrenal cortex produces a general tissue hormone has, it may be said, recently received some support.

That cortico-adrenal extract is able to bring about a marked increase in energy output by contracting muscle or in working animals, e. g., the dog may run five or ten miles or more than 100 per cent farther than normal under its influence, appears to have been well proved (Hartman *et al.*,[13] Eagle *et al.*[14]). Beneficial effects of the extract on fatigue and in other conditions involving muscular function will undoubtedly be shown in later investigations.

The Adrenal Cortex and Sex Functions. The possibility of the involvement of the adrenal cortex in sexual activities, early suggested by clinical investigations but put forward three years ago (Corey and Britton)[15] on an experimental basis, is now being very vigorously debated. A brief review of the literature has recently been published.[16] Young rats under cortico-adrenal extract treatment have been shown to reach sexual maturity in twenty-five to thirty days, compared to a normal maturation age of approximately 100 days for this animal. Com-

plete adrenalectomy in animals results in a suppression of the estrous cycle; ready restoration of normal estrus is brought about, however, by the injection of cortico-adrenal extract in small doses.[16] Later experiments indicate that pregnancy cannot continue normally in the absence of the adrenal cortex. Completely adrenalectomized animals may nevertheless survive through the gestation period and show normal parturition and lactation under the influence of cortical extract.[17]

The results tend to indicate, therefore, that two hormones are elaborated by the adrenal cortex, and apparently are present in the relatively crude extracts which are now used. The more important may be considered to be the life-maintaining hormone, of proven efficacy in adrenal insufficiency; the second may be designated the sex-stimulating or estrogenic hormone, concerning which further results are keenly awaited.

Clinical Considerations. Mention only in brief need be made at this time of clinical conditions. Addison's disease has been shown to be comparable in many of its expressions to the condition of adrenal insufficiency observed in experimental animals. The muscular weakness, low blood pressure and body temperature, gastro-intestinal symptoms, reduced blood sugar and blood serum and chlorides, and high blood urea and non-protein nitrogen are found in both experimental and clinical conditions. Although pigmentation has not been definitely evident in animal investigations, it is significant that the signs and symptoms are approximately the same in other respects.

Regarding the treatment of Addison's disease with cortical extract, perhaps the most that can be said is that the outlook is promising. Good results have already been reported from many countries to date. The extract is obviously alleviatory, but can scarcely be expected to prove of curative value except possibly in selected cases. The usual presence in this condition of a serious infective disturbance, tuberculosis, involving both adrenal cortex and medulla, offers obvious difficulties in treatment. The Muirhead regime, which includes the use of adrenalin, appears basically rational; the glucose administrations which form a part of the treatment may also be considered physiologically correct. Furthermore, large amounts of sodium chloride have recently proved highly beneficial in Addisonian cases. The effective treatment of this condition awaits, however, further fundamental work in physiology and biochemistry.

Hypertension has been related to adrenal hyperactivity for many years past. That sub-total adrenalectomy, involving destruction of two-thirds of each gland, should be carried out for essential hypertension scarcely seems justified. In a recent report by DeCourcy *et al.*,[18] the results achieved do not seem convincing. There appears to be no evidence that high blood pressure is related to overfunction of the adrenal cortex; rather, it may be postulated that the medullo-adrenal and sympathetic mechanisms, because of frequent and exaggerated functional displays, are responsible for essential hypertensive conditions.

It is possible that hyperthyroidism involves in a great many cases hyperfunction of the adrenal medulla. The unstable emotional condition, the hyperglycemia and glycosuria which are commonly associated with this condition, are rather strongly indicative of heightened medullo-adrenal as well as sympathetic activity.

Physiologists and biochemists in this and other countries are feverishly working towards the development of purified preparations of the adrenal cortex. Several investigators have announced that crystalline products have been obtained. Among them, Kendall[19] reported recently an empirical formula for the hormone—$C_{20}H_{30}O_5$; this worker also stated that he is now engaged in synthesizing the substance. It is not daring prophecy to venture the opinion that within only a few years potent preparations made from the adrenal cortex will be introduced generally into the field of medicine, and that these substances will markedly affect the care and treatment of widely-varying disease processes.

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THE MANAGEMENT OF CROSS-EYES IN CHILDREN—ILLUSTRATED WITH LANTERN SLIDES.*

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Cross-eyes in a child is not only disfiguring, but also detrimental to the eyesight and future well-being of the child. A child whose eyes are crossed has an odd facial expression which may be termed a stupid or a dumb expression. As the child grows older, he becomes self-conscious of his affliction, his playmates call him "cross-eyes," "cock-eyed," or similar names. He soon develops an inferiority complex, shuns the contacts of other children and prefers to play alone, which is abnormal. Aside from his appearance, there is a more serious condition developing in the cross-eye. He is using only one eye in order to see. The cross-eye is idle as far as use is concerned. Because of non-use its retina and its visual nerve centers in the brain fail to develop during that important developmental period of life, which is from birth to six years of age. If it is neglected during that early developmental age this cross-eyed child is doomed to go through life with but one useful eye, which is a marked economic and social handicap to him. In these times of modern progress and keen competition, employers are hiring only physically perfect men. A boy with only one useful eye is put to a decided disadvantage. There are many physical defects which cannot be remedied, but at the same time there are some which can be markedly improved if treated early and properly. These few certainly should not be neglected.

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Cross-eyes is a condition which usually can be corrected if treatment is begun as soon as the condition is discovered, no matter how young the child may be. As physicians and medical advisers to the public, it should be our duty to advise the public intelligently. Do not tell the parents that



Before Operation. After Operation.

Fig. 1.

Note marked internal squint of right eye before operation. The facial expression is entirely changed after operation. A recession of both internal recti muscles was done.

the child will outgrow cross-eyes, but advise them to see a competent ophthalmologist and allow him to give advice. Valuable time is lost while waiting for a child to outgrow cross-eyes. Waiting may result in a permanent loss of vision in one eye. No one would intentionally cause a child to lose

the sight of an eye. Let none of us be guilty of such a thing unintentionally by failing to give proper advice.



Before Operation. After Operation.

Fig. 2.

Note marked internal squint of left eye which was entirely corrected by operation improving the facial expression of the child. Recession of both internal recti muscles was done.

In order to treat cross-eyes properly the ophthalmologist must have the whole-hearted co-operation of the parent and child. The progress is often slow and treatment may extend over a period of many months. The parents receive a superabundance of free advice from neighbors and friends. They become discouraged and often appeal to the family physician in whom they have profound confidence. It is at this time that he can be of great assistance by encouraging the parents, and co-operating with the ophthalmologist.

When the case is first seen, a definite prognosis cannot be given or the course of treatment outlined until certain very careful and exact examinations are made:

1. The vision in each eye must be determined as accurately as possible. This may be accomplished by the use of one of the several types of illiterate vision charts.

2. The presence or absence of paralysis of any of the extra-ocular muscles must be observed. This is important because the paralytic type is difficult and unsatisfactory to treat. Only the management of the non-paralytic type will be discussed in this paper.

3. The degree and the type of squint must be determined. It is most important in the operative treatment to know whether the cross-eyes are due to over-activity of the internal recti muscles, or to under-activity of the external recti muscles.

4. The amount of refractive error in each eye must be carefully measured under complete atropine cycloplegia. Atropine drops should be used for at least three days. It is often necessary to check the findings a second time. The prescribing of correct glasses depends upon one's accuracy in retinoscopy.

5. The duration of the squint and the age of the patient must be considered. Should the squint be of long standing, the chances of correcting it by means of glasses are lessened. In patients past the age of six years, the chances of improving vision in the squinting eye are poor.



Before Operation. After Operation.

Fig. 3.

Note extremely odd facial expression which is entirely corrected after operation. Recession of both internal recti muscles was done.

In treating cross-eyes, there are three goals to reach: 1. Straight eyes. 2. Normal vision in each eye. 3. Binocular stereoscopic vision. These goals may be accomplished by two methods of treatment—the non-operative, and the operative. The non-operative method should always be used first. In cases of large refractive errors, much can be accomplished by wearing the full correction, together with muscle training. During this period, vision in the squinting eye can be improved by causing the patient to use the eye. This can be accomplished by covering the non-squinting eye at intervals, or by blurring the vision in the non-squinting eye by means of atropine. After four months of constant

wearing of glasses, should the eyes fail to become straight and remain straight at all times while wearing the glasses, operative measures should be attempted. If the squint is due to over-activity of the internal recti muscles, they should be weakened by recession. Should it be due to under-activity of the external recti muscles, they should be strengthened by some shortening operation—advancement, tucking, or resection.



A B

Fig. 4.

Note that eyes appear to be crossed in Fig. A. In Fig. B the eyes appear straight after narrowing the bridge of the nose by means of the fingers. This is a case of pseudo-squint whose visual axes are parallel but the aparent squint is due to a wide nasal bridge.

After the eyes have been straightened (the visual axes made parallel) by operative means, the vision in the originally squinting eye must be improved and fusion developed by careful and constant training over a period of months. Until the three goals have been attained, e. g., straight eyes, normal vision in each eye, and binocular stereoscopic vision, the squint in children under six years of age is not considered corrected.

CONCLUSIONS

1. Cross-eyes are an economic and social handicap.

2. To correct cross-eyes in children, treatment must be finished by six years of age.

3. Non-operative treatment should be attempted no longer than four months should the eyes fail to become straight.

4. Operative treatment should be attempted no matter how young the patient may be if the non-operative treatment fails.

5. Cross-eyes in a child are not corrected until he has straight eyes, normal vision in each eye, and binocular stereoscopic vision.

DISCUSSION

DR. H. S. HEDGES, Charlottesville: The doctor has made a very good presentation of a condition which we are constantly meeting and in the treatment of which the ophthalmologist has got to depend very largely upon the heartfelt cooperation of the family physician and the parent. Remember in all these squint cases, first, that binocular vision and fusion, upon which we so much depend, is developed during the first six or seven years of life. If you wait until after seven years of age, when an eye has been squinting, you will never be able to develop binocular vision. In fact, if you wait after the first six months or the first year, the fusion faculty is developing in that eye. If you hold the prism base out before that eye, you will notice that the eye is moving in, to get rid of the annoyance of double vision. It is important to get at the child early, before you lose the possibility of developing that fusion faculty.

Where there is a large refractive error you can often, by correcting that, get rid of the squint. The child will, of course, have to wear that glass the rest of its life. But if you can not correct it by a glass, you have to resort to operation. If you can correct by the use of glasses, I believe that is better.

As to handling your cases, it is hardly possible to begin too early, I believe. You can put a glass on a child two years of age without any trouble at all. In some of those little fellows I find a bifocal is a real advantage.

But what I want to emphasize is the importance of cooperation between the ophthalmologist and the home doctor, because it is going to be a long, tedious course of training. If you find the refraction will hold it, that is a real advantage. But if not, then will come a long course of stereoscopic training, and there you have to depend on the mother. First, you have to find out what vision the child has. We can not tell what the child sees. The illiterate test cards have not helped me much. The best thing I have found is a series of cards showing a boy, a girl, and a teddy bear, and a ball. Get the child to tell you what each is, and get him to tell you which has the ball. Stand up close to the child, and keep on until you are quite sure the child will intelligently tell you which figure is which. Gradually move away until the child evidently begins to guess. As soon as they begin to guess where the ball is, they have reached the limit of their visual acuity. Do that with both eyes. In that way you can get an idea of the visual acuity of even a small child.

In the later training we find the stereoscopic pictures are the best things to train the child. It takes a

world of patience and a great deal of time to train one; it will take months and months, and sometimes years and years.

The only thing in which I disagree with Dr. Pilcher is that I think he is going a little bit too fast when he says that operative measures should be attempted at the end of four months' wearing of glasses unless there has been improvement. You can hold the eye, and the operative procedure is so much easier if you can wait until they are a little older. The operation in a two-year-old baby is very much more difficult than in one even four years old, because of the difficulty of working in the inner canthus, and in the folds of the nictitating membrane there it is very hard to find the proper plane. Then the placing of those recession sutures in this little patient is very difficult. So, if we can, by training, feel satisfied that we are holding the condition of the eye, that the vision of the squinting eye is not going down, we prefer to wait longer than four months before interfering in these cases.

There are dozens of different ways of doing the operation, and one man's way is not another's. There is one thing I want to caution you against. Don't let any one do a simple tenotomy. That is not done so much now, but it was done some years ago. Then, instead of having an internal strabismus, they will have an external strabismus, which is many times worse. The laity have unfortunately gotten the idea that it is a very simple operation, but I do not know of anything around the eye that calls for greater skill or more accurate technique than the correction of a squint, and there is nothing more satisfactory when well done. You are taking a handicap from that child that would hamper it all its life. When it gets to school the children will pick on it as chickens do on a sick chicken, and it is a great handicap when it gets out in the world.

DR. R. H. COURTNEY, Richmond: Dr. Hedges has made the cosmetic side of this discussion very dramatic. At the same time, I should hate for us to leave with the idea that this is purely a cosmetic defect. Dr. Pilcher has so clearly shown that ophthalmologists are primarily concerned with developing two useful eyes. It is sometimes surprising that a general practitioner should be so very unconcerned, yet we all know how concerned they are about preserving both kidneys, although we know that two kidneys are superfluous. So are two eyes superfluous, but we are quite concerned with preserving the vision of both eyes. We should realize that operation does not dispense with the need of glasses. Even though we do operate on these children when quite young, we are still dealing with the same defective eyes, and after operation they have the same amount of hyperopia and, although they develop good vision, they have the same amount of eyestrain as before, and it is very necessary for them to wear glasses. If the operation alone corrected this, I think we should advise operation oftener, rather than put them through the vicissitudes of wearing glasses.

I think sometimes the general practitioner advises the family that these cross-eyes that follow the acute exanthemata of childhood, measles, whooping cough, etc., are caused by them. They also follow the Fourth of July. There is no *post hoc, propter hoc* reasoning applicable here. They come on frequently after these diseases because both are common in childhood.

DR. PILCHER, closing the discussion: I think we should start treatment in these children when the squint is first discovered. If you wait until after six or seven years of age, as Dr. Courtney has said, they will have only one good eye.

In speaking of family physician's advice, I wish to call your attention to a case which we saw a short time ago. This child came into the office and we advised that it be operated upon, as we had gotten no improvement with glasses. The parents went to a doctor in their community for advice. He said: "No, don't have an operation; you never get any result; no squint has ever been cured by operation; they only get worse." Now, that statement is entirely false and without grounds. Squints can be cured by operation, as is shown by the pictures which I have projected upon the screen. If operated upon early so that the eyes are straight, the child will have two good eyes instead of one.

ABDOMINAL SURGERY IN CHILDREN.*

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The surgeon who operates upon infants and children must approach his task with a pediatric attitude of mind. Some surgeons with wide experience in the adult field fail to recognize that "a child is not a little man," a fact which a former teacher of mine, John Lovett Morse, constantly emphasized in his classes. In a recent issue of the *Journal of Pediatrics*, Herbert E. Coe, of Seattle, calls attention to the necessity of recognizing that the treatment of surgical conditions in children is not merely

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an adjustment of surgical principles and technic to a small scale. That the child cannot be treated as a small adult is further emphasized by Thomas Myers, of St. Paul, who points out significant anatomical and physiological differences which the children's surgeon must weigh carefully if he would be cognizant of the narrow limits of safety in pediatric surgery.

Increased and unstable metabolism in children incidental to normal growth renders them more liable to a violent reaction from slight cause and makes disease sudden in onset and intense in symptoms. Moreover, symptoms are not limited to any particular region as in adults. The younger the child the more apt is the disease to manifest itself in generalized constitutional expressions rather than in focal signs and symptoms. Myers states that infants require much more water per pound of body weight than adults, that loss of 10 per cent body fluids is grave and 20 per cent usually fatal. Surgical shock is easily caused and hemorrhage poorly borne, because the proportion of blood to body weight in a child is 1 to 20 as compared to 1 to 13 in an adult. Hence, narrower margins of safety in surgery of infants and children demand special attention and preparation. Pediatric surgery must be gentle, rapid and skilful.

As I have pointed out in a previous paper, "Acute Appendicitis in Children," presented before the Richmond Pediatric Society, in 1931, "in infants and children the abdomen is normally large in proportion to the whole body and appears more so because of the small size of the pelvis and thorax. The abdomen contains not only the organs found in the adult, but also the bladder and upper end of the rectum. At birth the liver is proportionately very large, being about one-eighth of the whole body weight as compared to one-thirty-sixth in the adult. The size of the abdomen in infants and children is due to this large liver and to the presence of the bladder and rectum which have not sufficient room in the small pelvis.

"The colon occupies somewhat the same position that it does in the adult. During infancy the cecum may not have rotated and taken its position to the right side of the abdomen. The sigmoid with its long mesentery, instead of occupying its usual adult position in the left hypogastrium, may lie transversely in the suprapubic region or over to the right near the cecum, or it may hang down in the pelvis and give rise to a variety of partial fecal impactions.

"Except for the subcutaneous fat, the abdominal walls are very thin. The omentum in infants and young children is small in size, filmy in consistency, and does not give the usual protection against irritation and inflammation found in adults.

"The umbilicus is placed relatively low. In the newborn it is approximately at the central point of the whole figure."

The five most common pediatric conditions requiring laparotomy are acute appendicitis, gastrointestinal obstructions (intussusception, congenital pyloric stenosis), injuries, congenital malformations (hernias, diverticula, etc.) and tumors.

An accurate diagnosis, so essential to successful treatment, is particularly difficult in infants and young children. Digestive symptoms accompany most of their diseases, and the "upset stomach" is often found to precede or accompany some acute infection entirely outside of the abdomen. In the acute abdominal conditions the time element is usually very important, and the delay of a few hours may mean the difference between a prolonged, stormy convalescence or death and a normal recovery with a short, smooth convalescence. Furthermore, in children a favorable outcome of a surgical operation depends greatly upon a good general condition and a proper state of nutrition.

Except in cases of grave emergencies, a careful history should be taken before the examination is made so as to be able to direct the examination and delay causing pain with its accompanying crying, a factor so detrimental to a satisfactory abdominal examination. Misstatements and inaccuracies of the parent or nurse, either through ignorance, excitement or intention, must be carefully considered. In acute intestinal intussusception the history may often be more important than the physical and laboratory examinations. Opportunity should be taken, while obtaining the history, to gain the interest and friendship of the child. Much valuable information can be obtained at this time by careful inspection of the child's expression, movements and positions, such as flexed thighs in peritonitis, lateral position in empyema, characteristic labored breathing, facial expression with dilatation of ala nasi, in an early pneumonia.

The physical examination should be thorough, including especially the eyes, ears, mouth, throat, chest, glandular systems, abdomen, and last, but by no means least, a gently performed digital rectal examination. That part of the examination which is most likely to make the child cry should be postponed to the last, as it is almost impossible to examine satisfactorily a crying, rebellious child. Abdominal examination under a general anesthetic is sometimes indicated.

X-ray examinations are of the greatest value in children. However, an opaque meal or enema should not be done on any patient suspected of having an acute or even subacute appendicitis or peritonitis, as the presence of the barium in the gastro-intestinal tract and the necessary trauma of manipulation and handling for fluoroscopic examination will tend to spread the inflammation or even rupture an acutely inflamed appendix.

Considerable aid in differential diagnosis can often be obtained by laboratory examinations. A total and differential leucocyte count should be done. However, the value of a single observation, particularly if the total white count is about normal, may lead to a false interpretation. When it is possible to perform a Schilling's differential count, this should by all means be done. If properly carried out, it will show inflammatory changes much sooner than ordinary methods. Too much stress cannot be placed upon the accuracy and experience of the person making this test. Examination of the urine should be made. By urinalysis, complicating factors, such as diabetes, nephritis, and pyelitis can be determined. The findings of blood or pus in the urine do not necessarily mean a primary genito-urinary disease, as the presence of inflammation close to the pelvis of the kidney, ureter, or bladder may result in both pus cells and red blood cells in the urine.

The following three case reports illustrate many of the points which this paper attempts to bring out:

Case 1. Baby Virginia K. E., five months of age, was admitted to St. Elizabeth's Hospital in a stuporous condition in August, 1927. The family history and past history were irrelevant. The baby had been taken sick five days before admission. She had not vomited nor had she seemed seriously ill, but had a slight fever. The family physician was called and examined her. No treatment was advised except that she should be kept as quiet as possible and given large quantities of water. On the following day the baby was no better, and at that time the family physician prescribed calomel, to be followed by caster oil. The baby passed streaks of blood, became somewhat stuporous, but did not vomit. When the family physician again saw her, he did a rectal examination and felt a sausage-shaped mass which he thought was in the sigmoid. He made a diagnosis of intussusception and brought the patient immediately to the hospital for operation.

Examination showed a well-nourished, moderately dehydrated, stuporous baby girl. Abdominal examination, while somewhat unsatisfactory, revealed an indefinite mass in the left side. By rectal examination a mass was palpated which felt like a normal cervix uteri just within the anal sphincter. Attempts to reduce it by gentle pressure with the finger were unsuccessful. The rest of the physical examination was negative. The hemoglobin was 78 per cent by the Sahli method, w.b.c. 12,600; differential count 57 per cent neutrophiles, 43 per cent lymphocytes; blood smear not unusual. A diagnosis of intussusception with intestinal obstruction was made and immediate operation advised.

The baby was given ethylene-oxygen anesthesia. As soon as relaxation was obtained, rectal examination was repeated, and a further gentle attempt to reduce the intussusception with the finger proved unsuccessful. A medium-size rectal tube was inserted and warm soapsuds solution was injected with about two feet of gravity pressure. This did not change the position or condition of the intussusception. The simpler non-operative measures of reducing intussusception having failed, a low left rectus incision was made. Upon opening the peritoneal cavity, there was noted an increase in free peritoneal fluid which was blood-tinged. A large intussusception was found extending well down into the rectum, involving the entire colon, appendix, and terminal ileum. This was reduced as far back as the ascending cecum by gentle manipulation. Here the reduction was difficult and had to be performed slowly, as there was a great deal of edema in this region. The circulation of the ileum and colon returned satisfactorily after the intussusception was reduced. The appendix, bruised, edematous, and showing areas of early gangrene, was re-

moved. A 00 plain catgut suture was used in the peritoneal and serous layers of the cecum in the region of the ileo-cecal valve, and extending on to the ileum for a distance of about 2 cm. The suture was then reversed parallel to the original suture line and tied. This was done in order to form a dense longitudinal adhesion and to prevent a recurrence of intussusception at the point where the intussusception had originally started. Towards the latter part of the operation, the baby showed evidence of surgical shock. The anesthesia was discontinued and immediately prior to tying the through-and-through silk-worm-gut sutures in the abdominal wall, 120 c.c. of warm, normal saline solution was injected into the peritoneal cavity. The entire operation lasted thirty minutes.

The baby's condition gradually improved. She took water by mouth in small quantities, at frequent intervals, beginning immediately after the operation. Two hours after operation she began to expel gas by bowel, and five hours after operation she took two ounces of breast milk. From that time on, she made a satisfactory and smooth convalescence. The wound healed by primary union, and the patient was discharged from the hospital, well, thirteen days after admission.

COMMENT

This baby presented the typical signs of acute intestinal obstruction due to a very extensive intussusception. The symptoms, however, were not typical in that the patient did not vomit. The danger of giving cathartics for vague abdominal conditions is well illustrated in this case. The calomel followed by the castor oil, in all probability, increased the intussusception and produced enough irritation to prevent its reduction except by abdominal operation. Likewise, the value of rectal examination in the diagnosis of *all* abdominal conditions in infants cannot be over-emphasized.

Case 2. Master William S., six years of age, was playing with a large pane of glass which broke and stabbed him in the epigastrium. There was only slight bleeding. The child, however, began vomiting gastric contents which did not contain blood. The family physician saw the child within an hour, and his first impression was that there was only a small superficial laceration in the epigastric region. After the wound was disinfected a probe was passed with ease to a depth of two or three inches. Due to this finding, the physician brought the boy immediately to St. Elizabeth's Hospital.

Upon admission, about two hours after the injury, examination showed a mild degree of shock with subnormal temperature, pulse 160, and respiration 36. A jagged punctured wound in the mid-epigastric region, about three-fourth cm. in diameter, was noted. Surrounding this wound was a definite bulging of the abdominal wall for an area of 3-4 cm. in diameter. Moderate general rigidity of the abdominal muscles, especially in the upper half of the abdomen, was also observed. A leucocytosis was present (w.b.c. 14,000). No urine was obtained before the operation which was performed immediately.

Under ethylene-ether anesthesia, the wound was thoroughly disinfected and a probe passed easily into it for a distance of 4 cm. An upper right rectus incision was made about 10 cm. in length, and the skin perforation excised. The muscles and fascia were torn and bruised, and there was a rent in the peritoneum about 1½ cm. in length. Just beneath the peritoneal tear was a corresponding punctured wound through the lower portion of the right lobe of the liver behind which was a small (1 cm.) punched-out perforation in the upper anterior surface of the stomach. Through the gastric wound gas and gastric contents were escaping. There was only a moderate amount of bleeding from these injured areas and a limited early peritonitis. Careful search revealed no glass or other foreign material and no injury to the posterior wall of the stomach or other adjacent structures. The bleeding liver wound was closed with loosely applied interrupted mattress sutures of plain catgut. The gastric wound was sutured securely with two layers of 00 tanned catgut. A cigarette drain was placed between the liver and stomach just to the right of the sutured areas and the abdominal wound closed. The drain was completely removed in forty-eight hours; the wound healed without infection or delay; and the boy left the hospital sixteen days after operation, having had an uneventful, smooth convalescence. This patient has been followed at intervals for six years and has had no further trouble relative to his accident or operation.

COMMENT

The importance of carefully examining a seemingly minor wound is well illustrated in the case of this six-year-old patient. Prompt recognition of a serious surgical condition with immediate surgical operation was the chief factor in the smooth convalescence and complete recovery from an injury where a few hours' delay would have been fatal.

Case 3. Baby Barbara E. D., age eight months, was admitted to St. Elizabeth's Hospital, April 2, 1932, with a diagnosis by the family physician of acute appendicitis with probable abscess. The baby was two months premature and weighed only six pounds at birth, labor having been induced in the seventh month on account of a serious kidney complication in the mother. The baby nursed from the breast for the first four weeks, then was put on a formula of diluted cow's milk. A few weeks before admission to the hospital she had begun to take pureed vegetables. She usually had difficulty with digestion and occasionally vomited. For about two weeks prior to admission she had had a mild digestive upset. One week before admission she vomited at irregular intervals. The stools were more frequent than normal and showed evidence of poor digestion and fermentation.

On questioning the mother and grandmother it was found that there was a definite history of slight distention, the baby assuming a dorsal position with both thighs flexed on the abdomen, for a few days prior to admission to the hospital. During the present illness the symptoms simulated very closely those which had previously been due only to digestive upsets. Since the formula and feedings had been changed just prior to that time and there existed no definite signs of any intra-abdominal disease, the diagnosis in this case was quite difficult. The family physician stated that for two or three days preceding admission there appeared to be some tenderness over the region of the appendix. The morning before admission the rectal temperature was 102, the baby seemed quite sick, and the w.b.c. was 28,000. The baby's doctor made a diagnosis of acute appendicitis with probable abscess and sent the baby to the hospital for confirmation of the diagnosis and operation.

On admission the baby appeared very sick, with a rectal temperature of 102.5, pulse 176, and periodic colicky pains. The abdomen was distended. She assumed a dorsal position with both thighs flexed on the abdomen and a particularly marked flexion of the right thigh. Extension of either thigh produced increased pain and crying. The abdomen was tympanitic throughout except for a fairly large area in the right lower quadrant. Bimanual rectal examination revealed an indurated, irregular mass and fullness in the right lower quadrant of the abdomen. On account of the unusual history and age of the little patient, a pediatrician was called in consultation to rule out any systemic disease or trouble with the chest. His examination revealed a fairly well-developed, but anemic looking infant. Eyes, ear-drums, nose, throat, heart and lungs were entirely negative. His examination of the abdomen corresponded with mine. The blood examination showed hemoglobin 50 per cent by the Tallquist method, r.b.c. 2,664,000, w.b.c. 27,800, with 76 per cent neutrophiles, and a Schilling's differential blood count with a shift of 75 per cent to the left. Urine specimen could not be obtained before operation without undue delay. A diagnosis was made of acute ruptured gangrenous appendicitis with abscess, and immediate operation performed.

Under rectal avertin basal anesthesia, supplemented by "open ether," a high McBurney incision was made and, upon opening the peritoneal cavity, slightly cloudy, bloody peritoneal fluid was expressed under pressure. The appendix was found near the midline, just below the umbilicus, adherent to a mass attached to the anterior abdominal wall and corresponding to the mass previously felt by rectal examination. This mass was an abscess and contained about two ounces of foul, thick yellowish pus. The pus was aspirated with the suction apparatus. The appendix was gently freed from adhesions and delivered into the wound. It was markedly congested throughout and in the proximal portion was a large gangrenous area where rupture had occurred. The appendix was removed and drainage tubes inserted. The ether anesthesia lasted ten minutes, and the entire operation about twenty-five minutes. At the close of the operation, 175 c.c. of normal salt solution was given subcutaneously. The convalescence was quite stormy for the first ten days after operation. The baby then began to improve rapidly and was discharged from the hos-

pital on the twentieth post-operative day in good general condition, with the wound healed except for a small area where the drainage tubes had been placed. The baby's progress has been followed at intervals since her discharge eighteen months ago. She has gotten along satisfactorily in all respects.

COMMENT

Acute appendicitis in infants before the age of two years is quite rare, and on account of the usual delay in making the diagnosis the mortality rate is great. The difficulty of diagnosis is very well represented in this case, and the successful outcome is due primarily to the keen observation and judgment of the family physician.

CONCLUSION

Successful results of surgery in infants and children are largely dependent upon prompt recognition of the surgical condition by the general practitioner or pediatrician and his appreciation of the importance of the appropriate treatment at the most favorable time. Too much stress cannot be laid upon the necessity for complete medical and surgical cooperation in pediatrics.

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DISCUSSION

DR. WM. B. MCILWAINE, Petersburg: Dr. Horsley has given us a very timely paper. He has brought out very definitely, I think, in his paper, the differences between the adult and the child from the physiological and pathological and anatomical points of view, and I feel sure that all the surgeons in Virginia realize these points. That means that I think the surgical profession as a whole realize at present that operations on a child are slightly different from operations on an adult, due to those things which Dr. Horsley brought out.

In Dr. Horsley's first case, the one of intussusception, which is always an acute affair in infants, and which generally happens anywhere from the sixth to the ninth month, in my experience, the following things have been of the most value in diagnosing the case. The first thing, I would say, that strikes you is that the patient is in shock; the patient is dull and stuporous. That leads you, naturally, not to consider the case lightly, but to go into the examination very thoroughly. In observing the baby, we almost always find rhythmic pains, rhythmic intestinal pains, unless the case has gone so far that there is no intestinal rhythm at all. The third thing is that you almost always feel a mass in the rectum. With these things in mind, even though there is no vomiting and occasionally no blood in the stool except after examination, I think you will be justified in doing an operation. Personally, I have had no success with the non-surgical method of reducing intussusception.

One thing Dr. Horsley did not bring out is the method of differentiating ruptured visci from small injuries. In one case I had, a child fell in the street and struck its abdomen against the curb. After six hours, diagnoses was made of ruptured spleen. Immediate operation was done. Spleen was removed and child made uneventful recovery. In another case, a child was running to get out of a rain storm and ran into a man who was also running to get out of the rain. Several hours after, the child was diagnosed as having a ruptured viscus. We thought it was a rupture of the intestine, which it proved to be. Immediate operation was done, and the child made an uneventful recovery.

In children, prompt recognition and prompt surgical interference are the mainstays in preventing disaster. Time is the most important element in these conditions.

DR. HAWES CAMPBELL, Enfield: While sitting here and thinking over the previous paper read by Dr. Coleman and this one by Dr. Horsley, this thought came into

my mind. What a debt of gratitude the public owes these people for utilizing their grey matter and studying out to the minutest detail these questions.

Coming down to Dr. Horsley's, it makes me think of some experiences in my thirty-six years of practice. One is the power of the press, the educational value of the newspaper; and I think that we are failing, in a way, not to let the public know what we medical men are doing and how we are laboring to save their children.

The next phase is this, that in treating a child, or anybody else, the private physician, the pediatrist, and the surgeon should cooperate.

The next thought that comes to me is the difference in diagnosis and treatment twenty-five years ago and today—the change, the wonderful improvement.

DR. J. BOLLING JONES, Petersburg: Dr. Horsley's paper was very timely. I want to tell you of two near accidents, one recent and one some years ago. I saw a child, a little boy, who was taken suddenly in the night with pain in the abdomen. When I got to him this little fellow was nearly frantic with pain. He had all the ear-marks of acute appendicitis.

In a child the history can not be gotten directly. In an adult the history can be gotten from the patient himself, and I do not want the wife to give me the history about the husband, nor do I want the husband to give me the history of the wife. With a child you have to get it from the mother. Therefore, we are lacking in that one point in dealing with children, because the history is indirect. In this little boy's case I took the history from the mother, and I thought it was acute appendicitis. I went home, six miles, and sent my technician back to do a blood count. The white count was up in the thousands. In the meantime, I told the mother to save a specimen of urine. It showed albumen and pus in clumps. When I got back out there, instead of finding an acute appendix, I found an acute gonorrhea in a little boy. As soon as I went to investigate the genital organs of the child, there it was.

Not longer ago than Sunday I was asked to see a child eight years old; the mother telephoned three times within an hour. She herself thought it was appendicitis. I went out there, and there was a little boy. Dr. Horsley made one point: he said the bladder in a child is an intra-abdominal organ, and he is right. When I got out there I saw the child's abdomen was enormously distended. He had been sick since Wednesday, and this was Sunday morning. I went over him and ordered the mother to give the child an enema and nothing by mouth. In going over him I could tell he had an enormously distended bladder. We all know that in acute appendicitis the patient will not void. I thought nature was protecting him. I did not want to operate on a dead child, so I thought I would get a confrere out there with me and in the meantime sent my technician out. The technician got a blood count of 22,000, with the polys in the nineties. I went out at twelve o'clock and, to my amazement, found the child perfectly comfortable. He did not look at all like the child I had seen at nine o'clock. He had absolutely no evidence of an intra-abdominal lesion anywhere. Still, the blood count was away up. I found a few marks on his chest, went over him, and what did I find? In the first place, he had scabies. In the second place, he had impetigo on his legs, and his hands were covered with pustules. Undoubtedly he had an acute dermatitis from that.

THE CONSERVATIVE MANAGEMENT OF PELVIC INFECTIONS.*

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The treatment of pelvic inflammatory disease in the female at the present day is marked by a definite trend towards conservatism. I wish to outline the essential features of non-operative therapy as it has been employed in my hands during the past few years and to record the results therefrom. An exhaustive classification of pelvic infections is unnecessary. By far the majority of patients seen in practice suffer from the two common types, viz., gonorrhea and those post-abortive or puerperal infections, fulminating in character, marked by extreme persistency and usually associated with the streptococcus as a causative agent.

The treatment given to acute gonorrhea in its incipiency often determines whether the clinical course will be short or long and complicated. The application of irritating drugs, high-pressure douches, and the instrumentation of the cervix and urethra as formerly practiced undoubtedly led to a high incidence of adnexal disease. Absolute rest in bed, scrupulous avoidance of local instrumentation and of douches; the application of abdominal ice bags; the limitation of local therapy to vaginal instillations of mercurochrome or of tannic

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acid in glycerine as practiced by Curtis, will usually cause rapid subsidence of acute irritation in a relatively short time. For several years I have followed the technique of VonLackum, gently depositing a + gr. mercurochrome tablet against the cervix and placing a small cotton plug in the introitus with the patient in pronounced Trendelenberg position. The cotton is removed after several hours. Never is it packed tightly. Urethritis is treated by alkaline diuretics and balsamics, even the catheter being avoided as much as possible during this phase of the disease. The results of such a regimen have been gratifying and the incidence of development of andexitis has been almost nil.

In the presence of acute gonorrheal salpingocöphoritis the picture changes. For years a spirited argument centered around the question of early or late surgical intervention. The work of Simpson, Crossen, McMarrow, Curtis, Miller and others on a statistical basis led gradually to the present-day dictum "avoid surgery until the acute pelvis has cooled off." Fever should be absent for at least two weeks and not provoked by pelvic examination before surgery is undertaken. Adherence to these criteria has done much to lessen morbidity and mortality. Of course there are exceptional cases that will not subside under such a regiment. There are cases in which the appendix becomes involved, demanding its removal. Likewise, some patients present massive fluctuating abscesses which definitely point and reach such magnitude as to demand surgical drainage in order to prevent spontaneous rupture into a viscus or into the peritoneum. However, even here surgery is accompanied by increased risk, and the simplest procedure that will afford adequate external drainage with the minimum of trauma to the affected parts is imminently indicated.

Post-abortive and puerperal infections involve not only a more virulent organism but new pathways for its spread. The large blood spaces of the uterus resulting from pregnancy lead to engorged veins which quickly become the site of a septic phlebitis. This invites a spread of disease into the systemic circulation with consequent septicaemia, a matter of more serious import. Here we find the low lying infiltration of the parametrium with its characteristic brawny board-like induration. Recurrent chills and fever, indicating invasion of the blood stream, mark the clinical picture. Pain, while present, is likely to be less severe than in gonorrheal disease and often it is insignificant.

The treatment of hemorrhage and of retained fetal or placental parts in the septic uterus calls for meticulous judgment. Repeated transfusions will often take care of blood loss and allow time for disintegration and expulsion of the uterine contents. Should these measures fail, operative intervention should be limited to dilatation of the cervix and wiping out the uterine canal with gauze covered probes, using the utmost gentleness that the surgeon can command. Even these procedures are fraught with disastrous consequences and should be approached with an ultimate degree of reluctance. The septic uterus should be considered a "noli me tangere" of the greatest magnitude. Abscesses when definitely pointing in the cul-de-sac or broad ligament regions may be drained when fluctuation is massive and beyond question. Otherwise their absorption is allowed to proceed naturally regardless of the time factor. Operative surgery is streptococcic infection is hazardous even after long periods of time. Curtis advocates a rest period of at least two years subsequent to the acute process before any effort is made to remove residual masses. Streptococci live long and keep their potential virulence unimpaired in pelvic connective tissue.

Surgery being interdicted especially in the acute phases, how, then, may we manage pelvic inflammatory disease in order to reduce the infection to a minimum and save the pelvic organs from irreparable damage?

Conservative measures group themselves under the following headings:

1. Bed rest, Fowler position, maintenance of body fluids and of nutrition; in a word, supportive measures.
2. Abdominal ice packs.
3. Transfusions of whole blood.
4. Intravenous medication with especial reference to the use of mercurochrome, neoarsphenamine and the salts of calcium.
5. Intramuscular injections of foreign protein, such as boiled milk or the commercial defatted prolipin substances, such as proteolac, activin, etc.
6. The application of prolonged vaginal heat.
7. The treatment of the uterine cervix as a local focus for manitaining infection.

The application of most of these measures is familiar to every physician, so that a detailed account of their administration and their proper evaluation as therapeutic agencies is obviously superfluous. The abdominal ice pack is a time honored agency always to be applied. With spreading peritonitis, hot fomentations, kept at a proper temperature by electrical appliances, is perhaps a substitute worthy of trial.

The place of repeated blood transfusions, especially in puerperal infection, has been definitely established. In acute streptococcic infection in general no measure is of more value. While I use both the direct and indirect method at times, my preference for the direct transfusion of whole blood is decided.

As for intravenous chemotherapy, we may dismiss this controversial subject by saying that it has been disappointing. Yet, in the day when mercurochrome was more freely used, I have seen cases that showed a sharp favorable response to its administration. Neoarsphenamine is advocated in streptococcal infection and I believe worthy of trial. I have not used Rivanol.

Calcium chloride and gluconate by vein and by mouth, as advocated by Diasio, has, perhaps, relieved pain and in a few instances promoted resolution of the infectious process. The calcium ion depresses smooth muscle, relieves spasm, promotes active congestion and increases leucocytosis. However, I have not been impressed with its importance as a therapeutic agent in practice.

Almost routinely non-specific protein therapy has been used in gonorrheal cases. My impression is that it has some virtue, but I find it difficult to evaluate its status with any degree of exactitude. Certainly its application in well over one hundred cases has been attended with few if any dramatic results so far as prompt resolution of pelvic masses has been concerned.

Thus we find that the measures mentioned, with the exception of transfusion, act for the most part as adjuvants in therapy. At this point we find our chief weapons in combating pelvic infection to be building up the patient's resistance with prolonged rest and good hygiene. We now turn to two measures which, to some extent in acute disease and most certainly in the chronic type, have seemed to offer more direct evidence of their value in hastening the absorption of pelvic inflammatory exudates.

Prolonged Application of Vaginal Heat

The vaginal application of heat in pelvic inflammation is of ancient origin. Hot douches, the vaginal introduction of heated shot, the use of antiphlogistine tampons, and in latter years the application of diathermy are to be mentioned. As regards diathermy, much was expected from the work of Corbus and O'Conor in which the excellent results following the application of their cervical thermophore and of body electrodes to the pelvic region were described. Good results are still reported but the method seems uncertain, expensive and requires meticulous care in application. On the whole it has never become popular. My own experience with diathermy in pelvic inflammation in women has been limited to the treatment of cervicitis. After a short series of cases I was not impressed by my results and the method was discontinued.

The use of the apparatus devised by Charles R. Elliott has been the subject of numerous articles during the past two years. The technique offers a new principle of applying prolonged dry heat to the cervix, vaginal vault and the bases of the broad ligaments. In the hands of Holden and Gurnee, of Gellhorne, Graham and Counseller, the results have been so satisfactory as to deserve meritorious appraisal. According to the Elliott technique, a distensible rubber balloon with a cleft for the cervix is introduced into the vaginal vault. Through an inflow and outflow tube hot water is circulated, the distention of the bag and the temperature of the water being maintained by an electrical machine, provided with a pressure pump, a suction apparatus, a heating device and a thermostat. During the usual hour of treatment the temperature of the water is raised from 110 to 130 degrees F. The labia are protected by folded towels as the skin and mucosa of the introitus tolerate a lesser degree of heat than the mucosa of the vagina itself.

The treatment is given daily over a variable period of time. Its application in all stages and degrees of gonorrheal and streptococcic infections, preoperatively and post-operatively, has been recorded with enthusiasm. Resolution of inflammatory masses, of pelvic indurations, of abscesses, of cervicitis, as well as the maintenance of patency of

the tubes, where plastic surgery has been attempted, is the rule.

Thus Holden and Gurnee report 5,233 treatments in 500 patients with excellent results in the great majority. Only 13 per cent of their patients with pelvic abscesses required colpotomy as against 75 per cent treated without the Elliott principle. Counseller recently reported the end-results in forty-three cases treated at the Mayo Clinic. In twenty-four non-surgical cases the result was excellent in 70 per cent, while nineteen cases treated surgically were uniform in satisfactory response, when the Elliott treatment was applied post-operatively.

One year ago I improvised another type of vaginal heater which has been applied with so much satisfaction that I am now attempting with the collaboration of an instrument maker its further development into a type of apparatus that will overcome some of its minor defects.

The apparatus as originally devised consists of an electric heating rod tightly fitted through one of the holes of a rubber stopper. Through a second perforation runs a metal tube, and through a third a thermometer. The metal tube is adapted to a glass syringe with rubber tubing. The heating rod is protected by a cover cut from a rubber bath sponge. The bag is made of a piece of two-inch Penrose drain doubly tied tightly at one end and inverted. This is drawn over the heating unit, inflow tube, and thermometer and is clamped tightly to the rubber stopper by means of a ring clamp carrying thumb screws for adjustment. (See illustrations.)

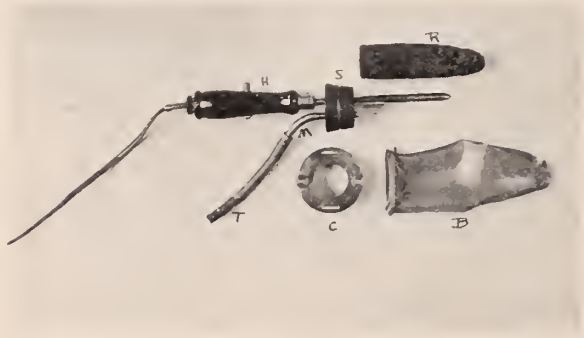


Fig. I.—Component parts of thermophore. H—heating unit. S—rubber stopper. M—metal inflow tube with rubber tubing. T. R.—conical porous rubber protector. B—distensible rubber bag. C—ring clamp with thumb screws and eyelets for tapes.

In applying the instrument, all air is aspirated and the rubber adapter tubing clamped. The vagina is wiped dry, the unit inserted gently to the cervix and the apparatus held in place with a T-binder. The rubber bag is filled with warm water, its distention being adjusted to the comfort of the patient. The inflow tube is then clamped off, the apparatus is connected to a light socket and the electric current turned on. The heat is gradually raised over a period of one hour to the tolerance of the individual. It should not exceed 130 degrees F. The current may be turned on or off by patient or nurse. Bulging of the bag at the introitus and possible burning is prevented by encircling the apparatus with a two or three-inch strip of gauze placed just distal to the stopper. A strip of adhesive is bound around this and a thin layer of dry lamb's wool is applied over the adhesive tape. The apparatus is allowed to remain in place one hour, when the current is disconnected. The bag is emptied of water, the apparatus removed, its parts dissembled and sterilized.

While this instrument in its present form is quite perfect, its application numerous times in thirty-two cases has convinced me of the value of the principle involved. In no case have we had burns of any consequence. The relief of pain, the production of profuse cervical discharge, and the resolution of pelvic induration have been striking and consistent in the clinical results. The indications for surgery have been lessened to such an extent that salpingectomy and similar procedures have rarely been required. The average number of treatments has been ten or twelve. In one instance we dealt with a protracted and neglected steptococcic infection associated with gynatresia, poor uterine drainage, and pyometra. Following a plastic vaginal operation and the release of cervico-vaginal adhesions, the heater has been applied over fifty times. However, this exceptional patient is now making satisfactory response and has almost no palpable pathologic changes in the adnexa. Four cases of post-abortive or puerperal infection have been somewhat slow in their response to treatment, but are greatly relieved and their pelvic induration is progressively subsiding. I feel that caution should be used in applying this type of treatment initially, especially in streptococcic disease. Any exacerbation should call for temporary cessation of the treatment, which is to be used again with more caution after the acute symptoms have subsided.

ERADICATION OF CERVICAL INFECTION

Finally, I wish to consider the uterine cervix as a focus of infection both from a local and systemic standpoint. The endocervix with both acute and chronic inflammation, whether it be due to gonorrhea, to lacerations and infection incident to parturition, or even to the prolonged irritation of a pessary, readily becomes a stronghold for a variable bacterial flora, including streptococci, staphylococci, bacilli of the colon group, as well as the gonococcus. This focus draining into the pelvic lymph spaces offers a constant source of infection directly to the adnexa and pelvic lymph nodes. Curtis holds that gonorrheal tubes become free from gonococci in about two weeks after the subsidence of fever. Further exacerbations are due to reinfection from the cervix.



Fig. II.—Thermophore assembled for application.

Furthermore, the importance of the cervix as a systemic focus in such diseases as arthritis, endocarditis and nephritis is receiving more and more emphasis. The cervix has properly been called "the pelvic tonsil."

Again, the cicatricial changes incident to lacerations and to cervical infection itself not infrequently lead to stenosis with consequent poor uterine drainage, dysmenorrhea and adnexal pathologic change. For these reasons alone, leaving out of consideration the relation of endocervicitis to the development of cancer, the eradication of cervical infection in pelvic inflammatory disease becomes a matter of paramount importance.

The application of the cautery in various ways has been a time honored method of treating endocervicitis. Radial stroking of the portio vaginalis is usually advocated, but, in my hands, has not infrequently failed to cure the leucorrhea or infection. More rigorous deep cauterization, while destroying the nidus of infection in the cervical glands, is fraught with the danger of dense cicatrization such as follows any burn. Intractable stenosis ensues and makes the cure worse than the disease. Furthermore, the scarred cervix from cauterization dilates with difficulty, as is attested by the protests against the method from obstetricians who are impressed by the dystocia resulting from such a procedure. Again, scar tissue from cauterization is resilient and quickly contracts, reproducing stenosis. Hence the cautery should never be applied to the cervical canal in a woman of menstrual age. Textbooks on gynecology do not stress this point sufficiently. Cervical amputation and tracheloplastic procedures are less frequently followed by stenosis. Nevertheless they are associated with obstructive symptoms often enough to be contraindicated except under unusual circumstances in women before the menopause.

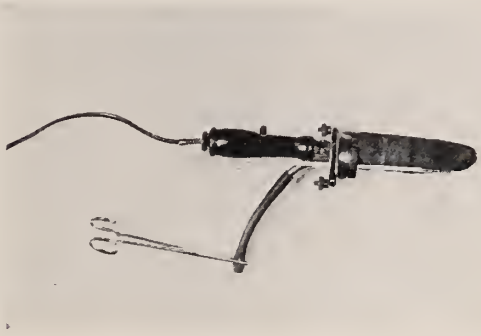


Fig. III.—Thermometer added to unit. This is placed outside the conical rubber protector so as not to come in contact with heating unit.

Electrosurgical coagulation and conical excision of the endocervix with the electric rotary wire loop knife introduced by Hyams, have been welcome innovations of which I can speak with praise. They have replaced the electric cautery in my own personal work. With the loop electrode knife, under infiltration anesthesia, using the technique of Greenhill, one can almost amputate the elongated cervix and cone out the endocervical glands as easily as one can apply the cautery. The procedure may readily be carried out in the office. Patients thus treated must be carefully watched over a period of three weeks for hemorrhage which occurs in variable degree with the separation of the thin coagulum. Douches and heat treatments are contraindicated during this period. The cervical canal should be

wiped out with a mild antiseptic every few days to remove gross sloughs or retained blood clots which may allow a moderate septic absorption. I have personally made a practice of passing a sound through the cervical canal at three and six weeks after operation. Usually at the end of six weeks the canal is entirely epithelialized. Such minor pelvic pain and parametrial induration as the patient may have as a consequence of treatment by this time has disappeared.

The cicatrix from electrosurgical endocervical excision is usually soft and much more pliable and distensible than that consequent to application of the cautery. Stenosis of any degree has been infrequent and dysmenorrhea after two or three periods has been the rare exception. In fact, a number of patients with obstructive dysmenorrhea have been relieved as a consequence of this type of therapy, when previous simple cervical dilatation had failed. My experience with electrical endocervical excision now includes more than fifty cases. They have responded with almost uniform satisfaction. Chronic adnexal disease seems to be favorably influenced by the procedure, and exacerbations after healing of the cervix have not been seen. One must emphasize, of course, that the procedure should not be carried out in the acute stages of pelvic infection whether this be in the cervix or in the adnexa. This follows the general principle that all operations on the cervix, regardless of type, are to be done only when pelvic disease is in a stage of distinct chronicity.

CONCLUSIONS

The advantages of a conservative approach to dealing with pelvic inflammation have been reviewed. Aside from the drainage of large abscesses with massive fluctuation, the treatment of sharp hemorrhage and the removal of retained products of conception which may be occasionally forced upon us, surgery has no place in dealing with acute infectious pelvic disease.

In chronic inflammatory disease, the application of vaginal heat by the Elliott method or by the technique which I have described, the cautious surgical treatment of focal endocervicitis along with the establishment of good uterine drainage, will lead in a high percentage of cases to absorption of pelvic indurations and parametrial masses of inflammatory tissue to such a degree as to approach clinical cure and to make surgical intervention unnecessary.

A small group of patients with fixed uterine displacement, with cicatricial masses, and chronic suppurative areas, will fail to respond. Both from reports in the literature and from personal experience when operation is required after conservative therapy, the procedure will need be less radical, more organs may be saved, the menstrual function maintained, and the patient's health thereby conserved to a greater degree than has been possible in the past with radical extirpation of the pelvic viscera.

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DISCUSSION

DR. GUY W. HORSLEY, Richmond: It is a generally accepted fact that pelvic infection should be treated conservatively, operative intervention being considered only in those cases in which definite abscesses form. Naturally, we have looked for the best form of conservative treatment. I believe Dr. Keyser has given an excellent outline of the established measures now in use, and has stressed undoubtedly one of the most important factors of this treatment, namely, the application of heat locally.

It has long been a problem as to how this can best be done. Many devices have been used, but most of these have been rather complicated, and, incidentally, expensive. A safe and simple method is what is needed—one that will produce even and controllable temperature. The vaginal heater suggested by Dr. Keyser seems to be such an instrument. In connection with the vaginal heater, I would suggest that we use hot abdominal dressings instead of ice packs. It is only logical to conclude that if direct heat is so beneficial, abdominal heat will also tend to cause a more rapid absorption and resolution of the infection. In our experience, the abdominal heat has made the patient more comfortable and has aided materially in the general treatment.

In the supportive treatment we must not overlook the value of fluids. The patient's intake should be at least 3000 c.c. during twenty-four hours. If there is nausea and vomiting, the fluids should be given subcutaneously or intravenously. In this type of case proctoclysis should not be considered, since it would cause more congestion of the pelvic viscera, with the possibility of spreading the infection. Hypodermoclysis will furnish fluids, but

practically no calories; therefore, this leaves only the intravenous and oral routes. The majority of these cases can and will do satisfactorily by the oral method, but we should always be prepared to supplement this with intravenous dextrose when the oral intake falls short.

Dr. Keyser has given us a satisfactory method of applying heat directly to the cervix and pelvic viscera, and I believe this to be one of the best single therapeutic agents that we have in treating pelvic infections.

DR. F. O. PLUNKETT, Lynchburg: I enjoyed Dr. Keyser's paper very much. There is one point I should like to mention. I disagree with Dr. Keyser in stating that the electric cautery is so dangerous in producing stenosis of the cervical canal. I grant you that if it is not properly used it is very, very dangerous, and will produce stenosis of the cervical canal; but if, in the first place, you are careful not to produce too deep striping, and, in the second place, if you will follow up your cauterization with the proper treatment afterwards (that is, have the patient return to the office at least every ten days during the first six weeks and clean out the cervical canal), then it will be the rarest thing that you will have stenosis of the cervical canal.

DR. KEYSER, closing the discussion: The point brought out by Dr. Horsley, as to the use of hot abdominal dressings, I think is quite correct, particularly in cases of spreading pelvic pertitonitis. Large, thick compresses can be applied quite satisfactorily, using an electric baker over them if necessary.

I think undoubtedly, that in using a vaginal heater of any type over a period of days, the concomitant use of an ice bag during that period would be contra-indicated.

With regard to my criticism of the electric cautery, of course, any generalization should always be qualified. I have used the cautery in many, many cases. I do believe, however, that the cautery applied with spoke-wheel radiation, as it has been called, will miss many of the glands which lie high up in the canal. It has been my experience, where I have been a little over zealous in cauterization to have a rather miserable patient on my hands. That experience is not singular. Masson, of the Mayo Clinic, has called attention to the fact that radical hysterectomy for stenosis has been required in a number of these cases. Likewise, Curtis and Novak call attention to the misuse of the cautery in its endocervical application. The cervical canal should be treated very cautiously with the cautery, if at all. I have no doubt that in the general treatment of cervicitis in the hands of the conservative, it may continue to be used with some degree of satisfaction. However, I do not believe the results will equal those obtained by electro-surgery.

STATE MEDICINE PROBLEMS.*

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If time permitted I would like to ask each of you this question: "What is your conception of State Medicine?" I have asked this question to a large number of doctors and have been not a little surprised at what the term appears to embrace in the minds of most of them. The popular conception seems to be a communistic state in which physicians are subsidized by the government, with consequent destruction of initiative and individualism—a condition threatened, but not now existent. Such a condition is desired neither by the government nor the laymen, and certainly not by the medical profession. Nor is there but slight chance that such a state will come to pass. However, State Medicine under a different definition is not only an entity now, but is here to stay. And rightly so.

The various divisions of our government, from the small rural community to the Federal Government, have very definite functions to perform for the common good which require the services of physicians and which should be properly included in the term "State Medicine." The problem of the medical profession, then, is not to prevent the advent of State Medicine, but to prevent it from menacing private enterprise.

The United States Public Health Service and the state and local health departments have done incalculable good to humankind and as a rule doctors cooperate with rather than antagonize these organizations, unless they compete with them unfairly in the practice of medicine. This unfair competition constitutes the real menace of State Medicine today, and, though few doctors have given the matter serious thought, the State of Virginia has been in

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

direct competition with private medicine for a number of years. This is especially true in regard to the method of handling by the state of the nervous and mental and tuberculous patients. Although these specialties embrace an enormous number of patients, they have long been step-children of the profession. I recall an address a few years ago by a president-elect of the American Medical Association at the time when the tremendous outlay of government funds for the construction of new hospitals for ex-service men (chiefly non-service connected) was being strenuously opposed by the medical profession. After a bitter denunciation of the then existing governmental plans, he made this statement: "Let them (i. e., the Veterans' Administration) take care of the n. p's.; let them take care of the consumptives; but let them leave the rest of the patients to their private doctors." Such an opinion expressed by an eminent specialist in diseases of the upper respiratory tract and spokesman for the American Medical Association is typical of the attitude of a large percentage of the doctors outside of these two specialties. Granting that many doctors prefer to get rid of neuro-psychiatrics and consumptives as soon as possible without considering the problems that may ultimately arise because of their lack of foresight in handling them, if the State and Federal Government are allowed a monopoly in the treatment of these classes of patients, it is not hard to conceive that the next step in State control will be one that will include other branches of medicine. To quote President Roosevelt in a recent address before the American Legion Convention in Chicago: "As every day passes the people of this country are less and less willing to tolerate benefits for one group of citizens which must be paid for by others." He further said: "If the individual affected can afford to pay for his own treatment, he cannot call on any form of government aid. If he has not the wherewithal to take care of himself, it is first of all the duty of his community to take care of him, and next the duty of the state." Although chiefly directed at ex-service men who had been receiving free hospitalization or drawing monetary benefits—or both—for non-service connected disabilities, these words should have a striking application to the present situation in Virginia, especially as it applies to the two specialties mentioned above.

Let us consider these conditions in Virginia. Any patient with tuberculosis who is a resident of the state may receive expert treatment in a well-equipped sanatorium for $1.00 per day if white, 50c per day if colored, *regardless of his ability to pay, provided he can pay that amount.* In other words, a wealthy patient may and frequently does avail himself of treatment far below cost (the state paying the difference), but an indigent who should be a responsibility of the state (if his community cannot take care of him) must frequently depend upon a private institution to give him free care. Recently I attempted to arrange for admission on a free bed in a state sanatorium of a girl eighteen years old who had active tuberculosis and whose home conditions were such that infection of several small brothers and sisters was almost inevitable. The widowed mother was unable to properly feed and clothe the children, even with the aid of the local welfare organizations, much less pay for hospitalization of the sick girl. I was told by the medical director that the free bed waiting list (there were forty-six free beds out of 350) was so long that if the girl's name were placed on it, it would probably be two years before she could be admitted! It is superfluous to say that by then she might easily be dead, with the whole family infected. At that time there were over fifty vacant beds in that sanatorium; vacant because of the inability of those on the free bed waiting list to pay the requisite $1.00 per day.

Two of the most important functions of the state in the field of medicine—I might say the only two—should be to prevent the spread of disease and to take care of those patients with *whatever disease they may be affected,* whose family or community is unable to do so. The experience I recited is a striking example and only one of very, very many similar cases of how woefully short the state has fallen in its duty in both of these particulars. While half a hundred beds in one state institution are vacant and many others occupied by patients who are well able to afford treatment in a private sanatorium, there are literally hundreds—maybe thousands—of consumptives dying perhaps, but certainly spreading the disease to others, who cannot receive treatment because of lack of funds. While such conditions exist, private sanatoria, which in some instances pioneered in the modern treatment of tuberculosis, have had to close their doors or are seriously threatened with so doing because they are morally forced to do about 50 per cent charity work

while many potential patients who are able to pay for private care are being taken care of by the state at $1.00 per day, the taxpayers of the state paying the balance. I wish to say here in defense of the excellent men in charge of the state tuberculosis sanatoria that they recognize the situation as outlined, but must refuse admission to non-pay patients in order to keep within their budget. Furthermore, their attitude is such as to discourage well-to-do patients in private institutions from transferring to a state sanatorium for the obvious reason of saving money.

Let us now briefly consider wherein the state in the management of its nervous and mental patients competes unfairly with private medicine. The state hospitals for the insane are under a different department of our state government and are operated on a different plan both financially and in policy. However, they offer elements of unfair competition to private institutions analogous to the tuberculosis sanatoria, but in some respects more dangerous from the standpoint of private medicine. Different from the tuberculosis sanatoria, no charge whatever is made for treatment, with one noteworthy exception that will be discussed later. Indigent idiots and lunatics in the state are provided treatment without cost (whereas tuberculous patients who might be cured and become assets rather than liabilities to the state are not adequately provided for), and wealthy dipsomaniacs or drug addicts, well able to afford treatment at private hospitals, are accepted without question so far as their financial status is concerned. I should qualify this statement by saying that patients are given the option of paying whatever they wish toward their expenses, but seldom pay anything inasmuch as so doing is not a requirement for admission. The noteworthy exception to which I referred above is the DeJarnette Sanitarium at Staunton. This is a thoroughly modern hospital operated by the state under direction of the staff of the Western State Hospital for the Insane, but advertised as a private sanitarium in open and unashamed competition with similar private institutions. In a communication to one of the staff members of a private sanitarium, the Superintendent of the DeJarnette Sanitarium gave as one reason for the latter's existence that it was to provide better treatment and accommodations to patients of means who were dissatisfied at the Western State Hospital. The rates charged by this sanitarium are comparable to the lower rates of a private institution. The facts relative to this institution have been brought out so forcibly and well elsewhere that I do not feel that it should be in the province of this paper to enlarge further on the simple statement of its existence. Let the plain fact suffice that the State of Virginia in this instance is competing in the most unfair way possible with the private nervous and mental hospitals not only in Virginia, but in other states (since its patients are not limited to residents of Virginia).*

Lest some of you assume that we who are being directly affected are griping solely because we are being hard hit, I wish to point out just how you as a specialist in some other field or as a general practitioner are being affected and will be further affected if the competitive practice of medicine by the state is not curbed. One of the chief present dangers is that those well-to-do patients who are receiving treatment by the state below cost are becoming "cheap-fee" minded. How many times have I had a prospective patient 'phone me asking for the price of an examination, never to hear from him directly again, but to find out later that he had gone to a state sanatorium where he could get the same examination for half our charge. It must be remembered that private physicians and institutions cannot compete either in treating or examining patients with state doctors, whose over-head cannot worry them. It is only natural for a patient who can get an examination and treatment for one condition cheap to expect charges for other ailments to be commensurate. And why shouldn't he? Why the discrimination? If one can get his lungs examined cheap by a good man, why not his stomach? If he can get an X-ray of his chest cheap, why should he have to pay a comparatively large fee for an X-ray of some other part of his body? If he can get treatment for tuberculosis at the rate of $1.00 per day or for a mental condition for nothing, regardless of his financial status, why shouldn't he get similar cheap treatment for diabetes or Bright's disease? This is not idle speculation. It is a trend of thought inevitable under such existing cir-

*On October 20, 1933, after this paper was written, the General Hospital Board adopted a resolution proposing that the DeJarnette Sanitarium be made a part of the Western State Hospital and that all patients be admitted to the sanitarium according to law, with charges to be made as fixed by law. This action came as a result of complaints from private sanitariums of unfair competition.

cumstances. And such a trend of thought might easily lead to just that form of State Medicine that so many of us fear—a subsidizing of all doctors by the state as a necessity in order that the practice of medicine might not die.

Another problem relative to State Medicine that cannot be disregarded is the potential, and in some cases actual, danger of state doctors employed to treat tuberculosis or nervous and mental diseases branching out in other fields. On a salary for treating patients in a state institution (and presumably his entire time is devoted to his work), pay for such extra work, in competition with general practitioners in the vicinity, is "velvet."

So far I have dwelt on the subject chiefly as regards the obligations of the state to the patients and the medical profession. Let me now point out the obligations of the doctor to himself and his fellows. I have implied that few doctors realize the significance of present-day State Medicine. Many indeed are lending their hearty support to the present scheme and are unwittingly furthering the advent of a more alarming state of affairs. To be specific: A well-known Virginia doctor made a diagnosis of tuberculosis in the case of a well-to-do patient who consulted him, and advised the man to take sanatorium treatment (this incident was told me by the patient himself, who was later under my care). Knowing of Asheville as a resort for the tuberculous, the man expressed the desire to enter a private sanatorium there. The doctor told him he should by no means go there, as Virginia had excellent state sanatoria with almost nominal rates and he would not be doing his duty to his state if he went to a private sanatorium for treatment. Duly abashed for his lack of patriotism, the man went to a state sanatorium for approximately two years. During that time he cost the state enough to keep two or three deserving indigents, whom the state would not accept, for several months at least. And remember, this man thought he was morally obligated to make himself an expense to the state even though able and willing to pay his way—because of the advice of his doctor! Yet, I have heard that same doctor in private conversation denounce State Medicine as a pernicious machination of the devil himself.

What is the solution? Obviously the state institutions now in existence will continue to function and should do so, but they should so function as to fulfill the obligations of the state to its citizens in the domain of medicine. The private institutions with whom they are competing have no hope nor desire that they cease to operate, but do feel very strongly that it is not only just to the patients, the medical profession and the taxpayers that they operate in such a way as to take care of all those patients who should be wards of the state, and to eliminate the element of unfair competition with private hospitals. Other states have in operation a sliding scale of rates ranging from zero up, according to the ability of the individual to pay. The disadvantages of such a system are obvious. It is virtually impossible to enforce it fairly and if enforced would not do away with the element of unfair competition. No private hospital can compete with a state institution the management of which does not have taxes, insurance, etc., to increase the over-head expense. The only solution which would be just to all parties concerned, and one quite simple, is for the state to accept all patients who are unable to pay private rates and to refuse admission to all others. Those who are able to pay and those who are not constitute a problem which will not solve itself. I have used the term indigent as applying to the type of patient who cannot pay his way even at a state sanatorium. It is possibly an unfair term because of its implication of pauperism. It must be remembered that the treatment of tuberculosis and often nervous and mental diseases extends over a period of months always and often years, and many a hard working man with a family, who barely lives within his income and who has saved only enough perhaps to take care of his wife's next confinement, is very much "up against it" when he is found to have tuberculosis. When his income stops his family is not provided for and he can certainly not afford hospital treatment, at even the cheapest rate, for a considerable period of time. His disease makes him an indigent and he must depend either upon local or state charity or the kindness of a private institution. The solution I have offered would provide for him. It may—probably would—be necessary to have social service organizations in each town or county in the state to weed out the patients who should not be eligible for treatment. The fact that no charge whatever is made would prevent many of those patients who are well able to afford private treatment from applying for ad-

mission out of shame if nothing else. Thus, the job of these organizations would not be difficult. It is entirely possible that the local health departments, whose sanitation officers and nurses are usually well acquainted with the financial status of the members of their community or county, could take care of this problem.

There are many activities of the state in the field of medicine that I have not discussed, such as the diphtheria prevention and smallpox vaccination clinics, the venereal and tuberculosis diagnostic clinics, the State Laboratory, etc. For the most part these activities are in the realm of preventive medicine and, as I mentioned before, having in large measure the co-operation of the doctors. They could not exist otherwise. Nor could the results that have been obtained in the control of communicable diseases have taken place without an organization such as the state has effected. Private medicine should have no kick coming in this regard, *as long as the state diagnoses and treats only those patients who are unable to pay for such work.* I have said that state activities could not exist without the co-operation of the medical profession. Let me repeat and emphasize this fact—and it applies not only to the activities just mentioned, but to those discussed earlier in this paper. If appropriate legislation is not put in effect (as we sincerely hope will be the case), the doctors themselves can, by concerted effort, easily control the situation. State Medicine should work with and be a help to private medicine, not a competitive organization to put the latter out of business. But, let me conclude by saying that if present conditions continue to exist, with the tacit consent and co-operation of the doctors throughout the state, further inroads by the state into the field of private medicine will inevitably follow.

Discussion

DR. JAMES KING, Radford: As Dr. Flannagan has adequately presented the problem of State Medicine as it applies to the treatment of tuberculosis, I shall confine my part of the discussion of his paper to the situation now existing in the mental institutions of the State. I refer in particular to the DeJarnette Sanatorium at Staunton. I shall leave to others the discussion of what is being done at the Southwestern State Hospital in Marion. The DeJarnette Sanatorium began operation in 1932. The General Board refused to sanction the opening of this unit at the meeting prior to the one at which it was adopted. The excuse for this entrance into the field of private medicine was "to afford people of moderate means private care where they did not choose the wards of the insane hospitals."

There was erected, accordingly, a private unit two miles from the Western State Hospital, which cost the State of Virginia $100,000. Do any of you know of any State institution that has or is advertising? The DeJarnette Sanatorium saw fit to send out catalogs, to distribute postcards, to use a separate letter-head, carefully avoiding any mention of this institution's connection with the asylum. In other words, it intended to deceive the medical profession into believing that this Sanatorium was just another private hospital for the care and treatment of nervous cases.

From its very beginning the DeJarnette Sanatorium admittedly set forth to make money. It avowed its purpose to capitalize the mentally sick citizens of Virginia. Even the State Penitentiary has ceased to engage in activity in competition with its citizens.

The State takes a hand in educating many of its young women and men to engage in the practice of medicine. The training is long, and arduous and expensive. Does it stand to reason, then, that the State—having made them physicians—shall straightway destroy them? And shall the State deliberately go about commercializing the insanity of as many as possible of its citizens?

If the State feels it is incumbent to afford less expensive sanatorium and hospital service to its well-to-do citizens, shall it not feel moved to also furnish all of its thrifty citizens at a cheaper rate of food, and clothing, and housing, and transportation, and heat and light and water and power and literature and legal service, and insurance—and indeed all their needs? If not, why not?

All of you are acquainted with the fact that a good surgeon may charge and receive in this State as much as one thousand dollars for a difficult operation. Since the DeJarnette Sanatorium was created to save well-to-do people of this State money in the treatment of its mentally sick, why shall not the State of Virginia build and man and maintain here and there throughout the State general hospitals and surgical units and special hospitals, by fleeing into which its citizens may escape paying the fees of private physicians who are engaged in the private practice of medicine without State aid?

The State must fulfill its duty in caring for its indigents. And yet, if you please, the Western State Hospital is crowded to the point of bursting with patients. At the Eastern State Hospital, eighty-five inmates are sleeping upon pallets (not beds) laid down in corridors! Is it not surprising, then, to learn that the State wishes to erect a $15,000 unit to the DeJarnette Sanatorium while the proper charges in another State institution sleep on the floor? At the Central State Hospital, at Petersburg, there are 350 patients crowded in the wards over the maximum accommodation. The State Colony, at Lynchburg, has a waiting list of over 200. At Catawba there are over ninety applications on file for admittance, and there would be more if the long list was not so disheartening to physicians.

And yet the State can build and maintain a private

sanatorium for the care and treatment of fifty-three patients! It can afford to provide one physician for the care of its thirty private patients, while four physicians attend 2,000 inmates of the Western State Hospital. It can engage eight graduate nurses to serve these thirty patients at the Sanatorium, while only four are in attendance at the Western State Hospital. Apparently it matters not that eighty-five patients have no beds, that hundreds of others are cramped into crowded and unhealthy conditions, while hundreds more await the opportunity to be received into a State institution.

The Superintendent of the Western State Hospital has boasted for years that no habitue entering his asylum received whiskey or drugs. And yet, two miles away he personally directs the administration of these very drugs to those who are fortunate enough to raise the ante. I ask you if there is any justification for this discrimination?

Let us pause for a moment to observe the financial conduct of the DeJarnette Sanatorium. It is State-owned; therefore there is no return to be made on the $100,000 investment. For the same reason there are no taxes to be paid. Inmates of the Western State Hospital are used in part to serve the patients of the Sanatorium. The products from the State-owned farm are used for consumption of the Sanatorium. Staples are purchased practically at cost through the State Purchasing Agency. One physician is employed. The Superintendent of the Western State Hospital conducts the place, giving two or more hours per day to thirty patients, while the regular 2,000 inmates that are the proper charges of the State are allotted the balance of the time. Physicians on the pay rolls of the Western State Hospital collaborate with the physician at the Sanatorium. Is it difficult to believe, then, that this institution is making money?

Does it seem plausible to any of you that any private enterprise can compete with such unfair competition? In the end the many triumph over the few. And the use of the taxpayers property is not limited to citizens of Virginia. Eight patients have been received from West Virginia; four from far away New York; five from Washington City and one from distant Montana.

What is to be done about this system that is galloping upon the private domain of medicine that is more intolerable than all the evils implied by the term "State Medicine?"

Shall we consult the General Board for Insane Hospitals? That has been done. They are familiar with all the facts I have enumerated and more. A few of the members of this Board recognize the hazard of the State entering into the private practice of medicine. The two physicians who serve on the board of fifteen have vigorously protested the operation of this Sanatorium. The majority, however, consisting of laymen, do not care what becomes of the medical profession. They are not concerned with our economic welfare and for reasons political or otherwise, they permit ruinous and destructive competition to continue without the raising of an eyebrow. Let it be said definitely, that the majority, not all, of the members of the General Board have turned their backs upon the rights of the general practitioner and refuse to exercise their power to rectify the situation.

It is clearly, then, *our* duty to voice our emphatic objection to these unfair practices. We have been challenged to defend the field of private medical endeavor. Should we of this Medical Society, representing organized medicine in this State, give even so much as our negative consent to the continuance of the DeJarnette Sanatorium and other similar activities, then we can begin now to reconcile ourselves to the sacrifice of the private practice of medicine. Surely we cannot endure the direct opposition of the State.

DR. W. T. GRAHAM, Richmond: I want to thank Dr. Flannagan for an invitation which I received late yesterday afternoon to discuss his paper. I think it was very generous of him to ask me to do it, and I think he was just as frank and honest as one can possibly be, because he mailed me a copy of his paper; and I don't think he came here with any idea of creating a row or disturbance. I think he is like the rest of the physicians in Virginia and wants to do right, and I think the State Board of Health wants to do what is right. We had no desire whatever to get into the field of curative medicine; and, wherever there is a borderline condition, if you can convict us of a mistake then we want to correct it. If you will do your part just as well as we do ours, then you need not trouble about State Medicine.

Some time ago we found out that one institution was making X-rays. We asked them to stop—in fact, insisted that they do stop, except in emergency, and when requested by local physicians. In one institution, also, we found that the younger doctors were doing some private practice in isolated sections; and we stopped that except in emergencies. We do not want State institutions to engage in private practice in competition with you. What we want to do is to prevent people from getting sick and, when they do get sick, help them get well. We do owe an obligation to the doctors; but there are about two million people in the State who have to be looked after, as well as the doctors. In doing that we do not have to trample on the toes of the private practitioners, and we dont want to. I think where there is any misunderstanding or disagreement we are perfectly willing to meet with you people, individually or collectively, and are perfectly willing to do what the Medical Society of Virginia wants us to do and what it will sanction. We have found things that needed correcting and have corrected them as best we could. We welcome your help in keeping from doing wrong. What we want to do is to help the laity and cooperate with you whenever we can.

Those of you who are not charged with getting funds for State institutions do not know the sleepless hours and the amount of sweating of blood that we who have that responsibility put through. It is awfully hard to get money when there is no money to get. You do not hear about our problems. We shall welcome your help

in solving them, and I assure you again that we do not want to tread on your toes by engaging in private practice.

DR. WARREN F. DRAPER, Richmond: I want to express my appreciation of Dr. Flannagan's very interesting paper. There are several points to which I should like to refer.

Dr. Flannagan pointed out the unfortunate situation in which some of the sanatoria find themselves in regard to meeting the demands for free beds. When the last General Assembly met it could not foresee what was going to happen in the economic situation and it made appropriations which, in its judgment, were adequate at that time. Many people were unable, however, to pay the one dollar a day required at our sanatoria and, as Dr. Flannagan says, we now have some fifty unoccupied beds for pay cases, while there is a long waiting list of patients who need free beds. Now it is very unfortunate of course that persons critically in need of sanatorium care, should be excluded as long as there are empty beds available. The matter was taken up recently with Governor Pollard and his budget advisory committee. After giving the matter their careful consideration, I am pleased to be able to tell you tonight that forty-one of the fifty vacant beds which Dr. Flannagan mentions will be turned into free beds on the first of November. (Applause.)

Now, as Dr. Graham has said, it is the earnest desire of the State Department of Health to cooperate with the physicians of the State in every way possible. We realize that we cannot accomplish what we are so eager to accomplish in the reduction of mortality and the preservation of health unless you physicians who come in such intimate contact with the people are actively engaged in carrying out your individual health activities. We must have your help. Who is really going to reduce infant mortality if it is not you, whose duty it is to watch over the mothers for the months preceding the birth of her child, to attend her at delivery, and to minister to the medical needs of both thereafter?

We want to cooperate with you and we want you to work with us in preventing needless deaths of mothers and children. We have our field of endeavor very clearly outlined. It does not conflict with yours; it should supplement and aid you. I have been in contact with most of the officers of this association. We have no bones to pick and no disputes. I like to think that the health department is better understood now than it was two years ago, when there was some confusion as to the objectives of our work.

Soon after assuming the duties of my office, I was impressed with the importance of the tuberculosis problems of the State and I was very anxious to deal with them as wisely and effectively as possible. I knew I did not know all there was to know about tuberculosis, and I appointed from the membership of this association an advisory board consisting of four of the leading practitioners of the State in tuberculosis to meet with our sanatorium heads and advise with us as to what is good practice and what is not, and as to what policies are to the best interests of the people as far as the control of tuberculosis is concerned. We have had several meetings; I have been in almost weekly communication with one or more members of this committee; and we have honestly endeavored to work out a sound constructive program.

Now, I was not aware of some of the conditions that Dr. Flannagan mentioned tonight, but I am very glad to have his viewpoint. I did not have a chance to look up the figures before the meeting, but my recollection is that about twelve or fifteen per cent of the beds at our sanatoria are free beds, and that about seventy-five per cent of the total number of patients is either on free beds or on beds for which some charitable institution or agency is paying the one dollar per day necessary. That leaves perhaps twenty-five per cent of our patients who are paying one dollar from their own resources. Possibly a few of these could afford to pay for treatment at a private institution. I will take the matter up with my advisory committee and will make such adjustments as that committee thinks proper.

It is a fine thing to have this opportunity to meet together and to consider the problems that confront us. I shall always be glad to meet with you at any time and to consider any problems that have arisen. We will try to work them out in a way that is satisfactory to all concerned.

DR. J. S. DEJARNETTE, Staunton: Gentlemen, I am a famous man. When I started the idea of having a Sanatorium to take care of people who could not go to a high-priced Sanatorium, I thought I was a benefactor; our General Board thought I was a benefactor; the Legislature thought I was a benefactor; the Governor of the State thought I was a benefactor and backed the idea. The idea was that there are people who would not care to send a loved one to a State Hospital and wanted to get something cheaper than a private sanatorium, and I would give them an opportunity to come and have their loved ones enter the DeJarnette Sanatorium for voluntary patients, a branch of the Western State Hospital. When we started that institution we started it with the idea that any one who wanted could come there and pay the expenses of the institution at about the actual cost. At one time we thought probably we might make a little money and give it to the poor people at the Western State Hospital who have no friends. There were 780 last year who did not get a thing from home—780 poor, helpless people who have been there so long that they have been forgotten, or whose people were so poor that they were not remembered at Christmas time. We dug up something; I contributed something myself; I don't boast about it, but I did, to give them each a nice present.

My idea was to give people of moderate means something they would be satisfied with, something as good as any sanatorium in the country. We gave them, for four dollars a day, a room with hot and cold water, as good diet as anybody could want (better than I have at home), hydrotherapy and all that sort of thing—all

that treatment free, or at least covered by the four dollars a day, and no extra charges for automobile rides. The State built this institution for approximately $100,000. We have charged nothing for the interest. Had we paid the interest, the upkeep and all other expenses we would have come out, according to our calculations, behind. We are accused of commercializing the insane. Let us see how much commercializing of the insane we have done. I came here thinking I was doing something for the people. Dr. Draper said he was in favor of the people and the general practitioner having a chance. Is the general practitioner complaining? Every practitioner who has come to the Sanatorium says the people of the State of Virginia ought to thank God for having such a place to come to.

Let's see what we have done. The patients who have come there have paid about fifteen hundred dollars a year. We have given them everything we could think of that they might want. Those who have come from private sanatoria have been paying from $4,000 to $2,800 a year—each person. We have saved patients who have come to us and have stayed a whole year, anywhere from $1,000 to $2,500.

Let us see what competition we have with the general practitioner. When a patient goes to a sanatorium, the general practitioner has bidden him goodby. So there are only two people in the State of Virginia that we compete with, and they are the owners of two private sanatoria. We compete with those two, I admit, but the private practitioner is not competing with us at all, and we do not compete with the private practitioner.

Ever since 1777 insanity has been considered such an affliction that the State has thrown its arms around these people and has taken them to care for. Now, insanity is a terrible thing; I expect within the sound of my voice are many who have some loved one who is so afflicted. Those of you who would be willing to send them to a sanatorium and save from $1,000 to $2,500 a year, assuming they would get as good treatment, if you will send your patients to me I shall thank you. If I am competing with you as private practitioners, tell me how. To do this work I have given my time and have never received, asked or wanted one cent. You may say it is the Western State Hospital's time and the Sanatorium is a special unit of the Western State Hospital. Well, it is. In the evenings I go down and see these patients, talk to them, encourage them all I can and help them in any way possible. I consider that instead of competing with the private practitioners I am cooperating with them, that instead of commercializing the insane I am de-commercializing them at the rate of from $1,000 to $2,500 a year a piece; and if that money came out of your pockets I think you would hesitate a long time before you refused to send them to me on that account.

Now, I think anybody that knows me knows that I could not build a sanatorium. Everybody that goes to the DeJarnette Sanatorium knows that it is a branch of the Western State Hospital for the Insane. If the people that don't go there don't know, what difference does it make?

A man comes there and says: "Doctor, my child has lost his mind. I cannot send him to a State institution; they say they will lock them up and never let them out." I say: "No, send him to the Sanatorium, and I shall be glad to take care of him."

In regard to room, I have not refused an application to the Western State Hospital in ten years for lack of room. The law is that patients must be sent to the nearest or most convenient State Hospital. At the Western State Hospital every man is taken who applies whatever may be his condition. Two came there a short time ago, dying. We took them in and did all we could, though we told their friends they were dying. We admitted 876 last year and furloughed 1,060; sexually sterilized 105, and discharged 424 as recovered. That is the record of the Western State Hospital for last year. All the doctors that come to our Sanatorium are surprised that we have such an institution. I am not knocking other institutions, but I do believe, instead of commercializing the insane, I have de-commercialized them.

Now, the General Board met on the twentieth of October (this month). They heard complaints that we were making money. The General Board decided not to try to make any money, to give the best care possible to people who want voluntarily to come to an institution that has better equipment than the average State hospital. Where the State hospital is run for anywhere from $150.00 to $200.00 a year per patient, this institution was run at $1,500 a year. We are going to cut the expense at the DeJarnette Sanatorium to three dollars a day, or $1,092 per year which is as little as we can afford to have it. We have one nurse there to two and a half patients; we have thirty patients and about thirty employees. I heard here that we have all the force of the Western State Hospital supporting those patients. Employment at the Western State Hospital is part of the treatment. Patients are delighted to go down to the Sanatorium where they get extra good fare, play golf, enjoy the life of the institution, and receive pay for their services. Some get well and go home. We have eight patients from the Hospital working at the Sanatorium.

If I am competing with a single private practitioner in any way I want to hear about it. The object is to benefit the greatest number of our people. Dr. Draper says he wants the people to be benefited. He expressed that, and expressed it well. Our Sanatorium patients are those who are sent by members of their family and their friends to the DeJarnette Sanatorium, and they send them there because they cannot afford to send them to a high-priced place.

Now, as to competition by the State; why not have all of our Wassermanns, etc., made by private practitioners or by some private concern doing that work. And yet I believe this department is one of the greatest assets of the State and of the general practitioner.

We are not making a cent at the Sanatorium; the

State says we cannot charge more than it costs us. When we get more patients, the price will be cheaper. The patients there have single rooms with hot and cold water, a fireproof building and all modern treatment.

If any of you gentlemen who think I am competing with you unjustly and unfairly, have a loved one or friend who is insane, if you don't send them to the Sanatorium I have no quarrel with you. All of you who think I am trying to help the people of moderate means, send them to me, and I shall be glad to receive them and thank you.

DR. A. M. SHOWALTER, Christiansburg: I assume the purpose of the Medical Society of Virginia, from its inception, has been to bring together the physicians of the State, in order that they may discuss and work out plans by which the physicians in turn may be of more service to the citizenship of the State.

We have listened to a very interesting discussion in which some rather critical and startling statements have been made. In rising to discuss Dr. Flannagan's paper, I do not know that I am familiar enough with conditions at Staunton or Catawba, so that what I may say may be of much help; I would, however, appeal to the physicians of the State to acquaint themselves a little more in the future than they have in the past concerning these State institutions about which so much has been said this evening.

I have never been to Dr. DeJarnette's Sanatorium. I understand it is a splendid institution. I have been to Catawba Sanitarium several times, although I did not know about all the things that Dr. Flannagan said are going on over there.

The question I desire to raise is, to what extent am I, or are you, fulfilling your duty to this Society, to the end that justice in this matter we are now discussing may fairly and squarely be worked out?

I have no word of criticism for the work the State Board of Health is doing in Virginia, either at the present time or during the past. I was somewhat surprised recently on a visit to the Southwestern Virginia State Hospital, Marion, Va., to note the expenditures in the X-ray and operating departments which the taxpayers in the State of Virginia have provided for. I do not believe there is an operating room in the State of Virginia or in the South so beautifully and expensively equipped as the one at the Southwestern Virginia State Hospital, Marion, Va. Yet this investment in the operating room and X-ray department is apparently intended to serve the 1,200 inmates of this institution. This struck me as being quite unusual and out of place when compared with the operating room and X-ray department of the University of Virginia Hospital which serves thousands of people as compared with the limited number at Marion, Va.

Someone has aptly said, "There are three sides to every question—your side, my side, and the right side." Suppose we wake up and take enough interest in these matters to see that equity and justice are carried out. It is to this end that I have addressed you for a few minutes.

DR. J. SHELTON HORSLEY, Richmond: It seems to me that the medical profession of Virginia has it entirely within its power to ward off or control State medicine and to cooperate with the State Board of Health and the State institutions, first of all, for the benefit of the greatest number of persons. If we do not put that forward, certainly we are going to lose the sympathy of the public, lose touch with the authorities, and lose sight of our own ideals.

You hear about the infringement of the rights of the private practitioner by the health officers, and they do suffer some loss. I have been a private practitioner out in the country where you could not drive a buggy but had to ride a horse over the mountains, and it is not just an academic question with me, for I have been through it. About six or seven years ago when I was president of the Medical Society of Virginia, there began to be a big sentiment to have the State free from diphtheria; and Dr. Ennion Williams, who was Commissioner of Health then (you know how enthusiastic he was), had this idea uppermost in his mind. I said: "Suppose we get every county in the State to cooperate with the Health Department in giving the toxin-antitoxin, will you be willing to it?" He said: "Not only willing, but glad to do it." I said, in my experience: "Well, I hope and believe we can do that." So I wrote to every county medical society in Virginia, and in those counties that had no medical society I wrote to some two or three prominent doctors, so every county had some communication. I asked that every county appoint a committee of two or three to consult with the State Board and have the State Board do all the work that they could in the administration of toxin-antitoxin and other health measures through the local profession. These local doctors were to charge what they saw fit in instances when they felt the people could pay, and, if they could not pay, to charge nothing. In this way they would maintain contact with the family and gain prestige. Now, suppose that had happened; what would be the result today? From those one hundred letters I got ten replies, and two were abusive. What could the Health Department do when the doctors would not cooperate? Could they let those children die of diphtheria? They sent into the counties representatives from the State Board, sometimes doctors and sometimes nurses, and vaccinated those children. Some of the people said: "Why didn't my family doctor tell me about that? He must be behind the times."

Now, if the private practitioners will cooperate with the State Board of Health in such matters as that, they will maintain their prestige and will increase their income. If they are not going to cooperate and help in this thing, just as surely as the sun will rise some sort of State medicine is going to come, and there is no use in whining about it after it does come, when it could so easily have been prevented. What do you think the State Legislators would say if you were to say to them: "You can't do this thing, because it interferes with our private practice." They would snap their fingers at you and say: "Well, we are looking after the taxpayers and

are not interested in promoting the welfare of a small group of doctors."

DR. C. LYDON HARRELL, Norfolk: Dr. Flannagan has presented us with a very interesting paper. He told us some things that are good for all members of the medical profession to know and some things he said should be investigated if we wish to check the inroads of State medicine.

As to his remarks concerning the State Sanatoriums for Tuberculosis, I feel they were a little too severe. These institutions have rendered and are still rendering a great service to our State. They have helped to put the treatment of tuberculosis on a higher plane than I believe it would have been possible to accomplish without them, from the standpoint of education and lowering the death rate from tuberculosis.

Dr. Flannagan states that he thinks the State Sanatoria should treat all cases free of charge who are not able to pay, and those that are able to pay should be forced to go to a private sanatorium for treatment. I suppose I send about as many cases to the State Sanatoria as any physician in private practice, but not one case in ten that I see is able to pay the rates at a private sanatorium, but the majority are able to pay a dollar a day. Now if these cases were denied treatment by the State, they would either get no sanatorium treatment at all, or be forced to leave the State in order to seek cheaper treatment elsewhere.

I feel that every open case of pulmonary tuberculosis should be hospitalized until they are bacillary free or until they have learned to protect themselves from infecting others. It would be impossible for the State to treat free of charge even those cases that are able to pay seven dollars a week and no more; it would put too heavy a tax on our people, and there would not be sufficient beds.

On the other hand, I feel that every individual should pay something for treatment if they are able; the indigent should be treated free. My experience has been, and I think statistics will bear me out, that the patient who helps to pay his way will make a better patient, will recuperate more rapidly and follow the cure better after his discharge.

As to the well-to-do, I feel that they should be advised and encouraged to seek treatment in a private institution in order that his bed may be occupied by some one not so fortunate. But if he be a citizen of the State and a taxpayer and should apply to one of the State sanatoria for treatment, I do not believe the State authorities have a right to refuse treatment.

Dr. Flannagan also called to our attention that the physicians in the State sanatoria are examining outside cases and discharged cases for a small fee, that otherwise would go to a private physician. I agree with him that this practice should be discontinued and, if brought to the attention of the proper authorities, will be stopped. I will cite one case to illustrate this. I have a patient that I sent to a State sanatorium several years ago. He was discharged in very good shape after about two years. He has never consulted me since in reference to his chest, but does for any other illness. He goes to the sanatorium regularly for X-ray and examination, has a copy of the report mailed to me and has his wife either call me over the telephone or stop by the office for any comment. As a remedy to this I would suggest that the physicians at the State sanatoria be requested not to examine any outside cases except by written request from his family physician. This will enable us to still seek valuable service as consultants, but at the same time keep the patient under observation.

DR. FLANNAGAN, closing the discussion: I appreciate the discussion of my paper and am gratified at the interest it has aroused. I wish to make it very plain that I have no fight with the State Health agencies. On the contrary, one of my chief objectives is to help them in their work.

Tuberculosis is a contagious disease and it is vitally important that those who are spreading it be cured if possible, but certainly isolated or trained in preventive measures. If the State takes care of all of these, whether they can pay a dollar per day or nothing, there will be no room in the State Sanatoria for those who can pay private sanatorium rates. Thus, the duty of the State to its citizens in the realm of preventive medicine will be fulfilled to a large extent and at the same time unfair competition with private enterprise that now exists will be largely eliminated.

I appreciate Dr. Harrell's remarks, but do not feel that they call for any comment.

Relative to Dr. DeJarnette's dissertation, I do not think he could have said anything more that would have better emphasized the points I made relative to the situation that exists in the nervous and mental hospitals.

VITAMIN D AND VITAMIN D MILK.*

W. L. HARRIS, M. D.,
Norfolk, Va.

If there is any part of the average physician's work that has received scant attention in the past, it is most probably the subject of nutrition, but with the newer ideas forcing themselves to the front, it is up to every physician to master the fundamentals of modern ideas in nutrition and see that his patients receive the benefits of our present knowledge upon the subject.

*Read before the Norfolk County Medical Society, November 27, 1933.

If the child has bow-legs, the mother is going to want to know why the doctor did not prevent it. If the child has a large, boxed-shaped head, contracted chest, badly shaped dental arches and jaws, irregular shaped and decaying teeth, she will likewise want to know why such could not have been prevented, and in the light of our modern knowledge it will be hard for the physician to escape his responsibility.

To those of you who have graduated in medicine within the last ten or fifteen years, the idea of the vitamins seems as a matter of fact and nothing unusual, but to those of us who graduated twenty years or more ago, the record of the discovery and development of the vitamins reads like a romance. I can recall very vividly how we pondered over scurvy and rickets; nobody could offer any plausible explanation even up to 1912. It was during this year that Funk, in Germany, discovered the first vitamin, C, or antiscorbutic vitamin. Every body looked upon it with due skepticism and was slow to accept it.

I recall having written a paper in 1913 on the subject of infantile scurvy, reporting a series of 135 cases observed by me during the previous ten years, and I at that time contended that the exact cause of scurvy was not known. We said that it was due to devitalized or denaturized foods caused by prolonged boiling, and that orange juice and fresh, uncooked milk, would cure it, but we did not know just how or why.

Long before vitamins were known the experience of physicians had shown that children suffering from rickets could be cured by the giving of cod liver oil. It was in 1916 that the English physiologist, Mellanby, discovered the antirachitic vitamin, or vitamin D, and his reports in 1918-19 give a clear-cut proof of the soundness of his theory and the value of this new vitamin in its relation to rickets. He used cod liver oil in his experiments.

McCollum and his co-workers at Hopkins, after diligent research, verified Mellanby's discovery and published, in 1922, a very elaborate account of their experimental work.

For a number of years there had existed a more or less vague opinion that the incidence of rickets was in some way connected with sunshine, fresh air, and other hygienic factors in the child's environment. That ultra-violet irradiation, however, constituted a specific cure for rickets was first definitely established by Huldscinskey, a German physician, working in Berlin during and immediately after the World War. For some time scientists were puzzled to reconcile the two discoveries—that of a specific antirachitic factor in the food, and that of the antirachitic action of ultra-violet rays—but the riddle was solved independently and almost simultaneously by Hess, of New York, and Steenbock, of Wisconsin, who announced in 1924 that antirachitic potency could be developed in a number of different biologic materials by exposure to rays of the mercury vapor quartz lamp.

Steenbock, of the University of Wisconsin, realizing the value of this discovery and the danger of its being promiscuously commercialized, secured a basic patent on the principle of conferring on any kind of foodstuffs antirachitic properties by irradiation. Dr. Steenbock assigned this patent to the Wisconsin Alumni Research Foundation, a non-profit sharing corporation organized to develop patentable ideas discovered at the University of Wisconsin.

Hess, in America, and Rosenheim, in England, lay claim to the discovery that ergosterol, which is found in many foods and in the human skin, can be converted into vitamin D by ultra-violet light. Windaus, in Germany, received the Nobel prize for this discovery.

What is the function of vitamin D? It is ordinarily thought of as the "bone forming and tooth forming" vitamin. It is certain that its presence in the body helps to keep the concentration of both calcium and phosphorus in the blood at a normal level. Whether it aids in absorbing these elements from the digestive tract, or prevents abnormal excretion of them, or causes the deposition of proper amounts of calcium and phosphorus in the bones has not been adequately studied. Probably it does all of these things. *The prevention of mineral loss is the specific function of this vitamin.*

Dr. McCollum says that the discovery of vitamin D in its relation to normal bone growth is one of the greatest contributions to public health ever made by science.

Occurrence of Vitamin D

It is abundant in fish liver oils, notably the cod and halibut. It occurs also in fish flesh to a limited extent, especially in the fatty varieties such as herring and salmon. It occurs sparingly in yolks of eggs, milk, butter and cheese. This comprises about

the whole list in the light of our present knowledge of foods.

In the tropical and subtropical climates an abundance of vitamin D may be obtained from the direct rays of the sun, converting the ergosterol of the skin into vitamin D, and the natives do not have rickets. In the extreme northern climates where there is little sunshine most of the year, and the natives live chiefly upon fish and fish oils, they do not develop rickets. In the temperate regions children have to be protected by clothing for the greater part of the year; hence they get little direct sunlight on their bodies except in the few summer months, and rickets is of very common occurrence.

Light as it comes from the sun to the earth is rich in ultra-violet rays, but in passing through the layer of air laden with clouds, dust, and the smoke of cities, most of the ultra-violet portion is filtered out and but little remains when the sunlight actually reaches us. Modern civilization, through the advent of clothing, indoor life, and air pollution, has defeated Nature's plan for us to make all the vitamin D we require by exposing our bodies to the ultra-violet rays of sunlight. The seriousness of this becomes obvious when we consider that an adequate amount of this vitamin is present in almost none of our foods. Egg yolk contains a considerable amount of it if the eggs come from hens that are getting plenty of sunlight, or are fed a ration to which vitamin D has been added. Ordinary milk contains a very small amount of it, and the various other sources contain mere traces. Of the medicines, cod liver oil and viosterol are rich sources of vitamin D.

These unavoidable consequences of our modern civilization, therefore, have conspired to defeat Nature's plan, and have forced us to devise some way of getting vitamin D from our food. The production of vitamin D milk seems to be the ideal method of doing it. Vitamin D milk may be produced in three different ways: first, by the addition of certain viosterol concentrates to the fresh milk after it has been drawn from the cow. This method is mentioned only to be condemned. The second method is the direct irradiation of the milk by a special carbon lamp and equipment devised for the purpose. This is just being introduced; it is a practical and satisfactory method, but the equipment is very expensive and it requires a trained technician to operate it. The third method is by feeding the dairy cattle irradiated yeast twice a day in the ordinary grain ration. This is a practical and altogether satisfactory method. Steenbock and his co-workers at the University of Wisconsin were the first in this country to report the production of vitamin D milk by feeding irradiated yeast to dairy cattle. Their first exhaustive report came out in 1932.

The Fleischmann Laboratories (Standard Brands, Inc.) were granted a special license to prepare this irradiated yeast, and they are now equipped to produce this irradiated yeast of standard vitamin D potency in large quantities, and at a reasonable cost. They at first produced a yeast of 25 D potency, but now they have increased it to 70 D potency, and it requires only about a four ounce yeast feeding to be added to usual grain ration of a cow producing thirty pounds of milk to produce a milk of 160 D units to each quart. The vitamin D potency is transmitted only through the fat or cream; hence, skimmed milk will contain no vitamin D.

A Steenbock "unit," or the rat unit, is simply a term to designate the vitamin D potency—or it may be defined as the amount of vitamin D that will produce a certain degree of healing in a given time under certain specific conditions.

The method of increasing the vitamin D content of cow's milk by the feeding of irradiated yeast to the dairy herd is no longer in the experimental stage; every detail has been carefully worked out, and now it has been so standardized that it is absolutely dependable. The process is very simple. Taking into consideration the amount of milk produced by the individual animal, and the average fat content of the same, a standardized formula has been devised for each cow, which will produce a milk of a certain vitamin D potency, and as long as this amount of irradiated yeast is given, there will be a uniform and dependable vitamin D potency in the milk.

Hess and many others have agreed after extensive clinical tests that a vitamin D potency of 160 units per quart is the most desirable. It has been found that it takes a certain length of time of yeast feeding for the accumulation of a standard vitamin D potency in the milk. With ten days feeding of yeast it has been found that 80 per cent of the maximum activation that it is possible to secure is produced. After twenty days feeding the antirachitic activation is brought to a maximum level; therefore it has seemed a safe method of procedure

to follow for the producer to feed for a preliminary period of twenty-one days before placing his milk on the market. This milk is then ready to be tested in a biologic laboratory. The Fleischmann Laboratories will do this first biological assay free of charge. Two quart bottles of milk, properly refrigerated, is shipped to the laboratory, and the cream, or butter fat, is fed to a large number of rats (not less than ten), who are in a rachitic condition produced by a specially fed rachitic diet. The promptness with which these rats heal indicates the vitamin D potency of the milk. Aften ten or twelve days these rats are killed and certain long bones are tested for the rate of healing, the details of which I will not attempt to describe. At stated intervals this milk is again sent to the laboratory to be checked as before. The uniformity of the product is very remarkable—just as accurate and dependable in every way as viosterol, cod liver oil, or halibut oil.

A license or permit to produce vitamin D milk is not granted to any dairymen in any community till the local medical profession endorses the idea and expresses a desire for this type of milk. So far, with two exceptions, permits have been granted only to dairymen producing certified milk, as this milk is produced under most ideal conditions, receiving adequate veterinary and medical supervision.

What are some of the advantages of this type of milk? To those who have given the subject of nutrition much thought it unfolds a wonderful field of usefulness. The product can readily be controlled, and the milk differs in no way in taste or flavor from that of any other naturally produced milk. It is now possible for the physician to assume more intelligently the responsibility involved in controlling the child's diet. It simplifies the procedure from the standpoint of the mother. If she puts her child upon vitamin D milk, she does not have to bother with cod liver oil or viosterol. Another thing is the reduced expense. Vitamin D milk can be produced for about one cent per quart extra expense. Cod liver oil or viosterol, if given, will cost at least ten or fifteen cents a day. Vitamin D milk may be pasteurized or cultured into buttermilk with perfect safety.

Vitamin D milk offers a wonderful diet for the expectant mother, as well as the nursing mother; an almost complete food—a rare combination of calcium and phosphorus, together with vitamin D—so much needed to supply what she is giving to the growing infant.

In my work in the public schools these last few years I have had a wonderful opportunity of seeing the far-reaching effects of improper nutrition of infants and young children. Not long ago, in conversation with one of my fellow physicians on the subject of rickets, he remarked rather scornfully, "why bother about rickets; nobody ever heard of a child dying from rickets." That is just the point. So many people do not worry over any disease or condition that does not produce a fatality once in a while. Physicians often refer to a pelvic deformity, or contracted pelvis, as simply a natural occurrence, whereas, as a matter of fact, this woman might never have had this deformity had she been properly nourished as an infant. Besides the contracted chests and badly stooped shoulders, the condition that confronts one constantly is the frightful condition of so many children's mouths—dental caries, contracted and misshaped arches, malocclusion, in many cases almost a "dental cripple." In the light of our present knowledge of nutrition and development, most of these conditions are the result of improper food or improper feeding in infancy or early childhood.

Just a thought in passing regarding dental caries. The foundation for the first teeth is laid many months before the child is born, and this may account for the fact that these teeth are often defective, in spite of all prophylactic measures employed in early infancy. The permanent teeth may be influenced to a great extent by what is done for the child during infancy and early childhod. For years the mother has been condemned for allowing her child to eat candy and other sweets, saying it would cause her child's teeth to decay. This theory was formerly accepted by everybody, and is still accepted by those who are not acquainted with recent developments in nutrition. There is much research work upon this subject in the last few years, and it has been clearly shown that the chief factor in dental caries is the absence of vitamin D and sufficient calcium and phosphorus in the food, together with insufficient vitamin C, which controls the condition of the gums and mucuous membrane of the mouth. Sweets and sugars have nothing to do with dental decay, *per se,* and they act only by cutting out the child's desire for more substantial foods. It is said that the West Indian negroes eat a great deal of

cane sugar, yet they have splendid teeth as a rule. No doubt their abundance of vitamin D, through sunshine, has a strong bearing in this case.

It is too often thought that as soon as a child passes through infancy and early childhood he needs no further regulation of his diet. This is a sad mistake. He needs a well-balanced general diet to which at least one quart of milk in some form should be added. There is no other food that gives such a happy combination of fats, proteids, carbohydrates, mineral salts, and if vitamin D can be added, there is no one article of food that can approach it for the growing child.

A low blood calcium—what does it mean? It could mean a lack of sufficient vitamin D in the diet. Leading authorities claim that sufficient minerals for all human needs should be obtained from our foods, and not from the drug store.

Experience, as well as scientific studies, has demonstrated that milk is the only food for which there is no effective substitute. There is more real food value in one quart of milk than in any other one article of diet that may be bought for the same price.

A child may be on what seems a well-balanced and sufficient diet, but is not doing well as far as general nutrition is concerned. If to such a diet one quart of milk is added, the results are often astonishing.

Quoting McCollum again, "When one studies mankind in various climates and under different economic conditions with the dietaries which are available to them, and attempts to appraise the importance of the dietary factor in determining their status, one finds convincing evidence that nutrition outweighs in importance either heredity or climatic influences, important as are both of these."

The criterion of what constitutes a healthy and well-nourished child varies very widely. The parents may tell you the child is never sick, not realizing the many hidden nutritional defects it may have. Roberts describes a well-nourished child as having a well-developed body, with firm muscles, good skin turgor, and sufficient subcutaneous fat to form a moderate padding over his bones and muscles. He has a healthy glow to the skin, with the mucuous membranes of the eyelids and mouth a reddish pink, and glossy hair. His eyes are bright and clear—no dark circles under them and his usual facial expression is bright and unworried even in repose. His posture is generally good, with head erect, chest up, abdomen not protruding beyond the chest, and elastic step. In disposition he is usually happy and good natured, and he is full of life and activity. His sleep is sound, his digestion good, his bowels regular. His teeth are sound and properly placed. He is, in short, what nature meant him to be before anything else—a happy, healthy young animal.

Vitamin D milk has been produced in many of the larger cities during the last two and a half years, and it is being adopted by the leading pediatricians and nutritionists of these cities, especially in New York, Boston, Cleveland, Detroit, Philadelphia, Chicago and Milwaukee, and they have found it uniformly satisfactory. This milk can be produced here, and, if it can be shown that there is a demand for it from the medical profession, there are dairymen† here who are ready and willing to undertake it.

School Administration Building.

†Since writing the above (November, 1933), one of our leading dairymen has undertaken the production of vitamin D milk and it has been on sale since March 20th.

THE DIPHTHERIA IMMUNIZATION PROGRAM IN VIRGINIA.*

B. B. BAGBY, M. D.,
Richmond, Va.

In the fall of 1931, Dr. Draper, Health Commissioner of Virginia, appeared before the Executive Committee of the Medical Society of Virginia to ask the Society to help work out a plan for immunizing the children of Virginia against diphtheria.

Some idea of the success of this plan is shown in the following table, compiled from the reports of the Division Superintendents of Schools to the State Department of Education. The figures for the last year are incomplete.

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

TABLE NO. 1

SCHOOL CHILDREN IMMUNIZED AGAINST DIPHTHERIA	*Cities*	*Counties*	*Total*
1930-31	17,692	95,501	113,193
1931-32	30,209	166,091	196,300
1932-33	37,041	182,933	219,973

From this you can see that nearly twice as many of our school children are now immunized against diphtheria as when the campaign began. It is also interesting to note that according to these reports, approximately 50 per cent of our school children have had toxin-antitoxin or toxoid; 43 per cent of the city children and 51 per cent of the rural children.

Below is given a table showing the number of deaths from diphtheria and the diphtheria death rate for the last four years:

TABLE NO. 2

NUMBER OF DEATHS FROM DIPHTHERIA AND THE DIPHTHERIA DEATH RATE FOR THE LAST FOUR YEARS

	No. Deaths	*Death Rate per 100,000 Pop.*
1929	214	8.9
1930	172	7.1
1931	225	9.3
1932	149	6.1

The rate for the cities in 1932 was 4.2 and the counties 6.8.

TABLE NO. 3

OF THE 149 DEATHS FROM DIPHTHERIA IN VIRGINIA IN 1932

21 were under 1 year of age
21 between 1 and 2 years of age
25 between 2 and 3 years of age
22 between 3 and 4 years of age
14 between 4 and 5 years of age
13 between 5 and 6 years of age
6 between 6 and 7 years of age
14 between 7 and 9 years of age
2 between 9 and 14 years of age
11 over 14 years of age

Thus we see that 122, or 82 per cent, of the deaths are under six years of age.

An analysis of the statistics of the Virginia State Department of Health, for many years, shows that 85 per cent of the deaths, and from 50 to 60 per cent of the cases of diphtheria occurred in pre-school children.

From the above statistics it is readily seen that to materially reduce the diphtheria deaths it is necessary to immunize more of our infants and pre-school children.

With this in mind, on January 1, 1933, we began the system of sending a return postal card to the mother of every baby in Virginia on or near his first birthday, asking if the baby had been immunized against diphtheria, and if not, why not. The returned postal cards indicate that the percentage of one-year-old babies immunized in the cities is about two and one-half times greater than the percentage immunized in the counties. This in part may account for the lower death rate in the cities as compared with the counties.

It is interesting to note the reasons given on the cards for not having the baby immunized. In order of their frequency the reasons are:

"Financial," "Neglect," "Have not had opportunity," "Not near a physician," "Lack of knowledge," "Waiting for clinic," "Not advised by my family physician," and "Opposed to immunization."

In my travels I often ask the mother if she has immunized her baby against diphtheria. If she has not, I ask her why not. A large majority of these mothers reply that they have "just neglected it," or have "not been so advised by the family physician."

The State Departments of Health and Education may be able to immunize a large part of the school children, but the wholesale immunization of the infant and pre-school population cannot be accomplished except by the effort of the family physicians.

The Virginia Department of Health is stressing the importance of diphtheria immunization in the following ways:

On every birth certificate sent out by the Department is pasted a slip with the following inscription: *"When the baby is six months old give toxoid to prevent diphtheria."* A card is sent to the mother on the first birthday, again calling attention to the importance of this protection. In every pamphlet sent out from the Department, whenever practical, diphtheria immunization is stressed; and we urge our public schools, Parent-Teacher Associations, Leagues, and Women's Clubs to make the immunization of children one of their major objectives.

Now that immunization in 95 per cent of the children can be secured by one injection of alum-precipitated toxoid, most mothers able to pay will be glad to pay for this protection. Many of the charity cases can be taken care of by the Federal Relief Board which has ruled that physicians can be paid for immunization against diphtheria in definitely indigent cases. But all of the educational propaganda put on by health and welfare agencies will produce comparatively little result in protecting the infant and pre-school child, unless the general practitioner will do his part in notifying

the parents of the importance of diphtheria immunization. The family physician is the one upon whom the mother depends for her guidance in all health matters.

The physicians may secure from us a supply of leaflets on diphtheria immunization to send to their patients with their bills or other communications. These leaflets are being distributed through our schools, Leagues, and Parent-Teacher Associations, but the same circular sent by a physician will be of far more benefit than distributed by any organization.

The most effective way of accomplishing this end seems to me to be that described at the last meeting of the Medical Society of Virginia by Dr. T. H. Daniel, of Charlottesville, who states as follows:

"Personally, I felt that with the families I attended I would have more influence than any public health official or any school authority; and so, at the possible risk of being called unethical, I sent a personal letter to the mothers of children of preschool age whom I had attended in their confinement. I found the records of 175 for whom I could get pretty accurate addresses, and I sent out 175 letters, writing each as a personal letter. I had the letters mimeographed, simply because I was sending out a good many. In the letter I stated that the child had reached the age when it was susceptible to diphtheria, a disease that could be prevented, and urged that these children be brought in for immunization. I stated in my letter that the cost was slight, but that if anyone was not able to pay the fee charged, I should be glad to do it for nothing. As a result of those 175 letters, I had over a 100 children brought to my office for immunization."

What has been accomplished by Dr. Daniel could with profit be duplicated by every general practitioner in the State. If they have no mimeographing machine convenient, we shall be glad to mimeograph a similar letter for any physician in the State, if he will send the stationery, letterheads or postal cards and a copy to follow.

Many physicians in the State are active in this health educational campaign, and the deaths from diphtheria are comparatively few among the patients of these physicians. Further reduction in deaths will be in proportion to the amount of education given by the family physician.

Before closing, it might be well to remind the physicians of the State that the State Department of Health is now able to furnish them at cost the alum-precipitated toxoid which usually requires only one injection for immunization. Drs. McGinnes and Stebbins have found that one dose of this toxoid produces as high percentage of immunity as two doses of the toxoid formerly used, or three doses of toxin-antitoxin. Our Bureau of Epidemiology also wishes to remind the physicians of the State of the fact that approximately 80 per cent of babies are immune at birth, but that most of them lose this immunity by the time they reach the age of six to nine months. Therefore it is recommended that the baby be given the toxoid when six to nine months old, be Schicked at one year of age, and again when he enters school.

Discussion

DR. F. D. WILSON, Norfolk: Dr. Bagby's department is making a splendid showing in its effort to rid Virginia of diphtheria. Nevertheless, there are somewhere between 150 and 200 deaths from diphtheria annually in this State, so it is quite obvious that the efforts being put forth by his department and the Department of Health must be increased if we hope to improve on the record already made. It is highly probable, however, that there will not be any very great improvement in what has already been done, because the Department of Health and the Department of Child Welfare have put forth (I do not say their best efforts, but have put forth) a very considerable effort, which will be very hard to improve upon.

Now, Dr. Bagby told us another reason why children are not immunized is that the parents are negligent, or the physicians are not sufficiently interested or are even indifferent. He told you that Dr. Daniel said he thought he would have more influence on his patrons than any health officer could possibly have. It would seem, therefore, that if we hope to do anything further than we have already done, or to improve upon our methods, we must educate not only the public but the physicians.

Norfolk has had a very interesting experience in the last few years. The number of deaths from diphtheria, up to the time of a very intensive campaign for diphtheria immunization, was about five deaths per year. Since that time the number of deaths has been about six per year. The population has increased from approximately 73,000 in 1910, to 130,000, approximately, at this time. The Department of Health, in conjunction with the School Board, immunized last year (from last spring to the present time), about 7,000 children. There were 18,000 admissions to the schools this year. Of the new admissions, approximately 13 per cent had been immunized. The number of cases in Norfolk, which had not materially changed in the last few years, I think dropped to about one-half when the intensive im-

munization began. It would seem to be impossible to make any great improvement in what we have already done unless we find some new method, and I believe that there are just two things open to us. The first is to put into effect some plan of compulsory inoculation for school children, in order that there may be no contact for the smaller children at home. We fail to recognize that many of our cases among children of pre-school age are due to contact with children of school age. The children of school age get it; they are a little more immune than the younger child at home, they take it home, and the children at home get it from the carriers. While a large proportion of the cases are in children under school age, yet many of them take it from the children of school age.

I took occasion to make some inquiry among the men doing work exclusively among children. I found that four men doing pediatrics exclusively, with fairly large practices, had had no cases during the last five years, yet there have been a large number of cases in Norfolk. These men had not had any diphtheria originating in children among whom they had practiced, during the five years. They had had one or two cases in previously immunized children.

The department has a card about eight or ten inches long and six inches wide, which is sent out to mothers of children recently born. It bears these words: "Have you had your child immunized against diphtheria? If not, why not?" Such a card, placed in the office of the general practitioner, would call attention to the necessity for immunization, and a large number of mothers, I think, would ask the doctor why the card is there. If the Department of Health would take the trouble to send every general practitioner in the State such a card to place over his desk, I believe it would result in a large number of additional immunizations.

I do not believe, however, we can get much further with our work unless we do have compulsory vaccination.

DR. PERCY HARRIS, Scottsville: I am afraid that Dr. Bagby has given the impression that the doctors of the State of Virginia are not cooperating with him as properly as they should. I do not believe, however, that there is a physician in the State of Virginia who would not do everything he could to prevent diphtheria. In most instances, the physicians will tell you, the parents say, just as Dr. Bagby said in his paper, that they do not have the funds, or that they are going to wait until the nurse comes around to vaccinate. I think that is the great drawback.

There are some cases of diphtheria—plenty of them—but they are getting less all the time. I am like Dr. Wilson; I think immunization ought to be compulsory. This compulsory vaccination ought to be done by the physicians of the State, and their remuneration should come from the State, so that they will have some income, because they are very hard up at the present time.

DR. T. H. DANIEL, Charlottesville: Dr. Bagby very kindly sent me a copy of his paper and asked me to make some remarks on it. I have nothing, especially, to say, except to emphasize some of the points he brought out. I believe the solution of this problem of the immunization of children against diphtheria lies with the general practitioner. I do not believe there is any question that he can have more influence with the people than any other agency. My own experience, which I tried out by way of experiment worked out very satisfactorily that way. I think he has already quoted me on it so I shall say no more about it. I have had most satisfactory response on that. Just this week a mother who had gotten my letter about her previous child brought her baby into my office and wanted to know when to bring this one in for immunization.

I think in Dr. Bagby's paper he says that 80 per cent of the deaths from diphtheria that occurred in the State last year were among children under six years of age—the pre-school age. As Dr. Wilson has stated, undoubtedly contacts are brought from school but if we wait for compulsory vaccination we are not going to eliminate diphtheria in the State. We men in general practice have to try to put it over with our own patients. We shall not get them all, but we shall get an increasing number of them to respond to this appeal, I believe.

DR. W. L. HARRIS, Norfolk: I did not hear Dr. Bagby's paper, but I am more or less familiar with the diphtheria situation, as I have been in school health work the last three years. This past summer I made a check on pre-school children. Up to six years these youngsters showed only 17 per cent had been inoculated against diphtheria, 17 per cent out of three hundred. There were 83 per cent that were still susceptible to diphtheria. Every child is entitled to a square deal and a fair chance, but they are certainly not getting it now, under the present way of doing things. How this can be handled best I do not know. When the child gets to school age it can be handled, but the majority of deaths are under school age. The general practitioner is certainly not taking advantage of his opportunity to do something for himself and something for humanity. The question is how we can best get at this. I have a number of friends in Norfolk to whom I have been talking during the last few years, and some of them have 95 per cent of their own clientele inoculated against diphtheria. We cannot put it on the State or on this person or the other person. The general practitioner is not interested to the extent of getting something done. It is a shame to let a child go through the most vulnerable age absolutely unprotected against diphtheria.

DR. J. N. DESHAZO, Center Cross: It is as Dr. Harris says; people wait for the clinic now. We went around from school to school and inoculated all who were willing to have it done. We urged them to do it. We charged them fifty cents for the three inoculations we were doing at that time and charged maybe a dime for the vaccine the State furnishes. The people will ask you when you are going to have another clinic. So it is a fact, as Dr. Harris says, that they are waiting for the clinic. There ought to be some standard set as

to what we are going to charge to do this privately. What we charge in the clinic is not enough for individual cases done privately, and we ought to have some standard; the charge ought not to be exorbitant; it ought to be very reasonable, in order to get people to immunize their children. In a colored school a few years ago I did a good many inoculations for which I shall never get anything, but I did it from a humane standpoint.

I think, as someone suggested, it would be a good idea to send out from the State Board of Health to the parents of each child twelve months of age whose birth is registered a card giving them the idea of having the child immunized. The question might be asked them: "If you have not done it, why don't you do it? You ought to."

DR. H. S. DANIEL, Louisa: I should like to ask Dr. Bagby a question, mostly for information. I do not know whether he covered this before I came in. What I wish to know, particularly, is the best method of producing this immunity. He spoke of three doses of toxin-antitoxin, two of toxoid, or one of the new preparation. I believe, from the figures on that, we expect to get 75 per cent immunity. That leaves 25 per cent of children who, after the treatment, are not protected. It is very difficult to get the children back for the Schick test; I find that much more difficult than to get them to take the treatment. I had in one community three cases of diphtheria among children who had had toxin-antitoxin, and that did a good deal to knock in the head all the propaganda the State Board of Health had carried on. Of course, if those children had been Schick-tested, it would not have happened. I have been giving three doses of toxoid and four of toxin-antitoxin. I believe that is safest, to give 95 per cent immunity; then if you do not get them Schick-tested, you have not lost so much. I should like to know the best method, because, if you do not get these children Schick-tested, you have not accomplished so much, after all.

DR. W. A. BRUMFIELD, Farmville: I hate to introduce a note of pessimism, but I do not think we shall get them all protected by any method. We have had smallpox vaccination for a great many years, and we still have cases, although we have compulsory vaccination. A great many parents do not want it done. We had an article in the paper in Prince Edward County saying that all children under five years of age would be inoculated free. Twenty-five per cent of the white children had been inoculated, and only 12 per cent more were done, raising the total of inoculations to 37 per cent by the time they were ready to go to school.

I believe it would be an unfortunate thing to have compulsory vaccination for school children, because we have it for smallpox, and it is almost impossible to have the child inoculated before he goes to school. If we have compulsory vaccination for diphtheria before going to school, I think it would be construed by the parents that the health department thinks it unnecessary before that time. If we do not get the pre-school child inoculated, we shall not prevent the deaths. In a district of 103,000 population, in five years twenty-eight deaths from diphtheria have occurred, most of them among the whites. Whites seem to be much more susceptible than Negroes. Only two of these twenty-eight were in school—only two over seven years old.

I believe, however, we are going to do a great deal more with this alum-precipitated toxoid. I attended the American Public Health Association, and the doctors there were practically unanimous in saying that with the one dose of this we get a higher degree of immunity in a shorter time than with the two doses of the old toxoid, some claiming as high as 98 per cent by the end of two months' time. But if they make a month-by-month check, they will find at the end of one month the rate of immunity is much higher with the alum-precipitated toxoid than with any other method we have used, which makes it very usable during an outbreak.

As I have said of typhoid fever, the disease has to be very near in time and place to make parents take their children to be immunized. So it is with diphtheria.

DR. W. B. MCILWAINE, Petersburg: We have three things to combat in our diphtheria program. The first is the inertia of the parents. I do not believe many of them are actively opposed, as Dr. Brumfield seems to think, but it is due to inertia. That is the first thing we have to combat. It is up to the schools, up to the doctor, up to the public health nurse.

The next thing we have to do is standardize our method of immunization, as Dr. Daniel brought out. Nothing gives it more of a black eye than to have a child who the mother thinks is immune turn around and have diphtheria. It is therefore essential that we tell the parents that the only criterion is a negative Schick test. That does not necessarily mean that the child has to come in and be tested, but it gives the doctor a clear skirt.

We have to develop something which will protect more children in less time, which it appears the bacteriologists are giving us in this new toxoid. If the State Board of Health comes out and recommends that the one dose be given, that it is free from reaction (which people do not like to get), that it will immunize quickly, then the doctors of the State will follow its lead. I have not done it yet; like Dr. Daniel, I have been giving three doses of toxoid; but I am perfectly willing to follow the State Board of Health if they will come out and make a statement.

Dr. Bagby is very wise to bring this subject before this meeting; I believe diphtheria can be eliminated; medical and health workers should see that it is.

DR. BAGBY, closing the discussion: Dr. Harris probably did not quite understand my statement when I said a great many physicians in the State are doing all they can to immunize children against diphtheria, but some few are still opposed to it. It is far from me to criticize the physicians of the State.

I should like to ask Dr. McGinnes, of the State De-

partment of Health, to answer the question about the best method.

DR. G. F. MCGINNES, Richmond: We have been very much interested in diphtheria and diphtheria immunization for the last two years because of the enormous increase in the number of cases which occurred in 1931. Since early in 1932 Dr. Stebbins and I have carried on a rather intensive study in a group of 16,000 children living in various sections of Virginia. We wanted to establish first the relative immunity of rural children of Virginia, and, second, the efficacy of the various immunizing materials.

We found that 90 per cent of the children at one year of age were Schick positive and that the immunity increased until the age of about eleven. There the curve reaches its roof at between 65 and 70 per cent Schick negative and remains constant up to twenty years of age. At one year of age, among children who have been previously immunized, about 90 per cent are immune. That curve, instead of going up, goes down and begins to parallel the curve representing the non-immunized group between 70 and 75 per cent Schick negative between the ages ten and twelve. These curves parallel each other through the age of twenty.

I mention this work because it demonstrated to us that about 50 per cent of the children entering school who have not been previously immunized are Schick negative. This naturally has a definite effect upon any immunization program.

We began our diphtheria immunization work some years ago by giving three doses of toxin-antitoxin at weekly intervals, obtaining about 70 per cent immunity in Schick positive children. After the introduction of toxoid we were able to render about 90 per cent of Schick positive children Schick negative by giving two or three doses at one or two weeks interval.

In discussing this work with Dr. William H. Park, of New York, he suggested that I try some of his highly potent toxoid (toxoid containing ten flocculating units per c.c.). With this material we were able to render 83 per cent Schick positive children Schick negative by giving one dose of one-half c.c. By using two doses of one-half c.c. at weekly intervals we were able to render 94 per cent Schick positive children Schick negative.

During the early part of this year the late Dr. Leon C. Havens, of Alabama, introduced a new product, alum-precipitated toxoid, and sent some of this material to us to try out in our study. With a group of 600 children we gave one dose of one-half c.c. to about 300 and one dose of one c.c. to the other 300. With one dose of one-half c.c. of this product we obtained 93 per cent immunity, and with one dose of one c.c. we obtained 96 per cent immunity in these Schick positive children. This group was composed of both white and colored children. If the colored children, who seem a little less susceptible but a little more difficult to immunize, were omitted and our figures based entirely on white children we would have obtained 98 per cent immunity with one dose.

The reaction from the use of alum-precipitated toxoid has been questioned in some quarters. In our limited experience, we feel that the general reaction following alum-precipitated toxoid is no more than with untreated toxoid. However, the local reaction seems a little more severe. I might warn you that a nodule is frequently palpable at the site of injection for several weeks after the injection of the material.

Our recommendations to our county health officers for the prevention of diphtheria are as follows:

Pre-School Children

One injection of one c.c. of alum-precipitated toxoid at or after the age of six months, followed by a Schick test at least six weeks after the injection of toxoid. The second injection of one c.c. of alum-precipitated toxoid is given to Schick positive reactors.

School Children

Schick test all children in the grades and give one injection of one c.c. of alum-precipitated toxoid to the positive Schick reactors.

Question: When do you get the maximum immunity?

DR. MCGINNES: It has been found that the maximum immunity with alum-precipitated toxoid in experimental animals is at the end of six weeks. With toxin-antitoxin and untreated toxoid I believe it has been shown to be between eight and ten weeks.

OBSTETRICAL EMERGENCIES.*

IRA M. HARDY, M. D.,
Kinston, N. C.

What a fool subject! When my good friend, Jones, wrote me for a paper, I sent him the above title and mailed my letter to him. After it was gone I wished I had sent a different title, because that is a fool title—and covers a lot of territory. Now don't think for a minute I am going to burden you with all the obstetrical emergencies, because they are countless, and any case that deviates from the normal is an obstetrical emergency, so I am going to give you a few cases that have come under my observation as practitioner.

Eclampsia is the first of importance. I never

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Norfolk, Va., December 5-7, 1933.

empty the belly of a woman who is having fits. I have seen seven cases in my life in which forcible deliveries were made, and every one of them promptly died. Get the fits controlled and the labor or delivery will take care of itself. I can well remember the first case of eclampsia I ever saw. I was sixteen miles in the country and had perfected the delivery of a primipara. I had my grip in hand and was in the act of leaving the house, and had walked a few steps from the bed toward the door. I heard a sound that attracted my attention. I looked toward my patient. Her face was drawn, and arm over her face. Then she began to jerk all over. Such a procedure just about scared the life out of me. She soon got over that fit and said, when she looked up, "I thought you were gone." I wanted to say in return, but of course I did not, "Yes, by God, and I thought you were gone, too." I did not have a blood pressure instrument in those days, but when I felt her pulse it felt to me like it was beating a thousand times a minute. I gave her by hypodermic one-half grain morphine, and by mouth thirty grains of acetanilid and enough more to make her blue, plus Epsom salts galore. That was about 8 o'clock in the morning. She had four convulsions. The salts acted so much we had to change the bed two or three times. The pulse slowed down to 70 and I left her home about 3 P. M. She begged for something to eat. She had no more signs of fits.

One more case of eclampsia is typical of a number of cases I have seen. This was a young woman who had had about three children. Some of her neighbors phoned me to come at once; she had had a fit. I rushed there as soon as I could. Pretty soon after my arrival she had a fit. Blood pressure was high. I treated this woman much in the same manner as I have just outlined. When the fits were controlled, I kept her bowels and kidneys acting with cream of tartar and Rochelle salts, and put her on meat-free diet. She went to term and had a normal delivery. That is the surest and safest method.

There can be no set rule for treating eclampsia. Every doctor must use his judgment and work out his own line of treatment. Whatever works best for me, that is mine regardless of what the books say.

Placenta Praevia

I know so little about placenta praevia I almost hate to mention it. It has been my misfortune to run across four cases, and thank God I have not seen any more. This is an exceedingly dangerous condition. When you go to a woman in labor and find a river of blood flowing from her vagina, you may suspect placenta praevia. A digital examination may reveal a placenta emerging and easily felt. Pack the woman long enough to give her a dose of pituitrin. The dilatation should not be considered; give the dose now, and make all possible haste in perfecting delivery, feet or head foremost. Time is valuable here. Saving life is of first importance. Take care of lacerations afterwards. Placenta praevia will test your skill, and then you may lose a patient. If you are in a hospital and have help, which is so badly needed, things are bad enough, but if you are in the country and you have to be doctor, nurse and all, God only can help you.

Complete Lacerations and Deep Lacerations

These conditions, from my observation, more often happen in strong, healthy primipara than other women. They are vigorous and strong, and their labor pains are so powerful the perineum often gives way. I have frequently been called to such labor cases, and sometimes the child is already born. These young women, being ignorant of the onset of labor, frequently wait until they get in the second stage af labor, then rush themselves through labor, not realizing what great damage they are doing themselves. Some teaching along this line would serve well. Women between 30 and 40 will often tear or rupture muscles of the perineum without making much visible sign. One woman I well recall, 36 years of age, had her first baby. The head for about two hours had been pounding away on the perineum. I was with her all the while, hoping it would dilate, and, just as the head was about to emerge, she said, "Oh, doctor, something terrible is happening to me." What she felt was those big muscle fibers ripping away. All women after delivery, then and there, should have the floor of the pelvis examined by the doctor, and, if it is found lacerated, even if obscurely, an attempt should be made to reunite those deep muscle fibers. You can do no harm and may do a tremendous amount of good. Eighty-five per cent of them will remain repaired. No time is ever better to stitch up a

perineum than just as soon as the placenta is passed. I have stitched them up with plain white tobacco or cotton twine and they held. I did that rather than wait until I could go to town and get another supply of catgut sutures. That was in horse and buggy days.

Frequently a doctor is called to go to a patient complaining of the colic. Especially is this true of a woman who has concealed her pregnancy. Then the doctor is caught without his obstetrical bag—fifteen or twenty miles from town. There is nothing to do but do the best you can and trust God to do the balance.

One case I distinctly recall. A large girl, weighing close to 300 pounds, had concealed her pregnancy and worked and complained with the colic or bellyache. I was called to her, and the party calling over the phone said the girl had a case of colic. I went as soon as I could, which was about the noon hour, and her mother said the girl had had colic all night and up to noon, but had not lost any time from her work at the tobacco barn. I put her on the bed and found her to be in the second stage of labor. I had nothing but my bare hands, but I stuck to the job and delivered this girl of a sixteen-pound baby. She made a good recovery. So it is well to get all the information you can before going to a patient much distance from the office. In fact, when I was doing a large country practice, I often carried my obstetrical case with me, and it served me well many, many times.

Uterine inertia most often happens in the second stage of labor. One may frequently be called by a midwife to see such a case. "Doctor, this woman has given out, and I thought I had better send for you." Some such cases do not respond to pituitary extract, and we are forced to resort to forceps—an instrument that has no doubt saved many lives, but, because of resulting lacerations and cervical tears, has been the beginning of many cancers, caused many deaths, and deformed and maimed many children, almost enough to offset the good it has done.

Another Emergency Not Uncommon

Still-births are very embarrassing. Parents cannot understand this, and often the physician cannot understand and explain it himself. Therefore, every effort should be exhausted before giving the infant up for dead. There are two instances that I recall that give me great joy when I look at them. One of these youngsters, now a grown young lady, was still-born, but after about one hour's work my efforts were rewarded and the infant began to breathe. Another, a boy now in his teens, the illegitimate son of an unfortunate school teacher, is her only means of support. So never give up hope. Keep trying, and then try some more.

I wish I might tell how to manage a labor case in country practice. Every case must be managed according to what you find. I would say, first, get a good, stout suit-case; equip it well with sufficient material and instruments and medicine to handle almost any case; put it in your car when you are called; then do the best you can. If you do not have what you need, there are some embarrassing moments for you.

THE NEUTROPENIC SYNDROME.*

REGENA COOK BECK, M. A., M. D.,
Richmond, Va.

Reports of this syndrome have appeared principally within the past seven years. In the past two years, extensive research and careful clinical observation have brought out many changes in viewpoint as to the character of the syndrome, the etiology and the treatment. This brief review incorporates these recent views.

*Read at the fifty-eighth meeting of the South Piedmont Medical Society, at South Boston, Va., April 17, 1934.

Neutropenia is a clinical syndrome characterized by a marked reduction in the total number of white cells and a great reduction or complete absence of neutrophiles. It is a constitutional condition or defect which may manifest itself due to one of several causes, even in the same patient.

Reports of this syndrome have appeared in the literature under many different names, such as agranulocytosis, agranulocytic angina, mucositis

necroticans agranulocytica, monocytic angina, granulocytopenia, granulopenia, idiopathic neutropenia, benign and malignant neutropenia. The majority of authors now use either the terms neutropenia, granulopenia or granulocytopenia.

This is a relatively new clinical syndrome. A few cases were reported before 1922. Between 1922 and 1927 Kastlin[1] was able to find only forty-three cases in the literature. Since 1927, the incidence has increased rapidly, so that now there are more than 500 cases on record.

Since the diagnosis and prognosis of this disease is dependent on an accurate interpretation of the blood picture, it is necessary to have an understanding of where and how these neutrophiles are produced and how they reach the peripheral circulation.

The tissue which gives rise to these neutrophiles is located in the red marrow which is found in the ribs, the vertebrae, the sternum, the bones of the skull and the os innominatum.

If we consider the entire marrow of all these bones as a unit we find that it is an organ of no inconsiderable size, having been shown by Wetzel[2] to have a volume, in the adult human being, of 1,419 c.c., which is thirteen times the size of the spleen and almost equal to that of the liver. The erythrocytes, thrombocytes and neutrophiles grow in this red marrow. It has been estimated that aproximately two-thirds of this red marrow is devoted to the production of the neutrophiles. This seems strange when one considers that there are approximately 4,500,000 red cells to every 4,500 neutrophiles per cu. mm. in the blood stream. But it must be remembered that the average life of the neutrophiles in the blood stream is four to five days, while the average life of the erythrocytes is twenty to thirty days. The portion of the red marrow forming erythrocytes is called the erythropoietic tissue, the portion giving rise to the neutrophiles is called the granulopoietic or myeloid tissue.

The cells from which the neutrophiles develop are fixed tissue cells, reticular cells, found in the interstices between the fat cells of the bone marrow. These reticular cells, with repeated divisions, give rise to primitive free cells which are about the same size and look very much like lymphocytes. These primitive free cells are found in the largest numbers and they are the cells that develop into the myeloblasts. The myeloblasts are the largest of the cells of this series. The myeloblasts, as they develop, become a little smaller in size, develop neutrophilic granules in their cytoplasm and become young myelocytes, sometimes called promyelocytes. As these neutrophilic promyelocytes become older they decrease a little in size and develop more and more neutrophilic granules in their cytoplasm, until the cytoplasm becomes filled with these granules. The nucleus, which has up to this time been round, now assumes a sausage or bean shape and there is evidence of ameboid movement beginning in these cells. These are mature myelocytes, sometimes called metamyelocytes, and designated by Schilling as juvenile cells. Further growth of the metamyelocytes is evidenced by changes in the nucleus and increase in the ameboid movements and they develop into segmented neutrophiles. The nucleus becomes more lobulated with age, first constricting to form two lobes, then three, four, five and more. At the end of four or five days the mature segmented neutrophiles (polymorphonuclear neutrophiles) reach the non-motile, senile stage and phyliologic degeneration begins. It requires from three to seven days for the promyelocytes to develop to the metamyelocyte stage, while it requires only a matter of hours or minutes for metamyelocytes to develop into the segmented neutrophiles. Normally there is always a large supply of metamyelocytes so that the myeloid tissue is ready to meet any emergency. Physiologic degeneration of these neutrophiles takes place in the blood stream, in the tissues and on the mucous membranes.

The mature neutrophiles do not seep out into the circulating blood at a constant speed, but, instead, they have a rhythmic delivery. They reach their lowest numbers in the early hours of the morning. At this time the total white cell count is lowest, as the neutrophiles constitute about 62 per cent of the total white cells of the blood. They then begin to increase in numbers and finally reach their highest point between two and three o'clock in the afternoon, at which time the total white cell count is usually double what it was in the early morning hours. The neutrophiles then begin to decrease in numbers. There is then a second rise about midnight, at which time they begin to decrease again until they reach the low point of the early morning hours. These facts should be taken into considera-

tion in evaluating blood counts in cases of suspected appendicitis, etc., as well as in neutropenia.

Just what the stimulus is that causes these neutrophiles to reproduce and grow in the bone marrow is a question which has not been answered. We have in liver extract, and other organ extracts, a factor which will cause the erythrocytes to reproduce and grow normally, but a similar factor to affect the neutrophiles in a similar way is yet to be isolated. This factor would be termed a maturation factor.

After the neutrophiles have reproduced and grown to maturity some stimulus causes them to come to the circulating blood. Of the many substances that have been shown to call the neutrophiles from the bone marrow, nucleic acid is most likely to be a part of the normal mechanism. As the worn out neutrophiles in the blood stream break down and disintegrate they liberate nucleic acid (which is their normal constituent) which in turn stimulates the outpouring of more neutrophiles. It is a question of demand and supply.

The normal procedure in the body is for new cells to constantly replace the worn-out cells. If the replacement cells are destroyed, or their development ceases, the supply cannot meet the demand. Also, when the number of these cells is greatly diminished in the blood stream there would be less neucleic acid to stimulate the outpouring of more cells even though there were a normal supply of replacement cells. Therefore, three factors may be responsible for neutropenia: lack of parent cells, replacement cells in the bone marrow (destroyed, as by drugs, roentgen ray, etc.); their inability to maturate properly (cause unknown); lack of a factor to bring the cells to the circulating blood.

The chief symptoms of neutropenia are extreme fatigue, malaise, drowsiness, sore throat, sore mouth and adenitis. The fatigue and malaise may have been present for some weeks prior to the other symptoms. These patients have often been diagnosed as having diphtheria, streptococcic sore throat or trench mouth. Any patient presenting the symptoms of sore throat or sore mouth, and septic and toxic symptoms out of all proportion to the local lesions should have a total leukocyte count and differential leukocyte count so that neutropenia may be ruled out. The onset of this syndrome may be with chill and fever, the temperature usually being around 101° F. These patients often give a history of weakness or lack of vitality for varying periods before the onset of the condition. The sore throat may be absent, and only fatigue, malaise and drowsiness to suggest the necessity of a blood study. Local lesions such as sore throat, ulcers of mouth or throat, gingivitis, ulcers of vagina, rectum, anus or skin usually appear as late lesions, or after the neutropenia has been present for a few days.

A brief illustration of a typical history of a fulminating neutropenia would be as follows: For four days an apparently strong and healthy patient of middle age feels sluggish and tires very easily; the fifth day has a slight chill and fever; the sixth day, a higher fever and drowsy feeling; the seventh day, a slight redness of the throat and a restless stupor; the eighth day, coma and death. Aside from these signs and symptoms, all findings are negative except an absence of neutrophiles in the blood stream.

A patient with chronic neutropenia may present only the symptoms of weakness and easy fatigue. These patients may develop an acute attack at any time.

The diagnosis must be made early if the mortality is to be reduced, and it must therefore be made on the more vague symptoms of weakness, lack of vitality, easy fatigue, malaise and drowsiness, which symptoms should be checked by a total leukocyte and differential leukocyte count. In a typical well-developed case the diagnosis is easy if the blood studies are accurately interpreted. The condition is occasionally confused with acute leukopenic lymphatic leukemia, chronic leukemia with low values for leukocytes, generalized sarcomatosis with involvement of the bone marrow, aplastic anemia, sepsis, and infectious mononucleosis. Repeated blood studies are essential, both for diagnosis and prognosis. It is probable that many cases with characteristics of neutropenia are overlooked because of inadequate laboratory studies. It must be emphasized that one blood study is not sufficient. Daily counts, or counts twice daily, may be necessary to establish the diagnosis. A patient with a total count of 3,500 or 4,000, and 50 per cent or less of neutrophiles, should be watched carefully and checked frequently.

The total number of leukocytes in a case of neutropenia may be as low as 250 per cu. mm. The percentage of neutrophiles may be from 40 per cent

down to 10 or 5 per cent, or they may be completely absent. A careful study of the blood smears as to the percentage of myelocytes, mature or immature, myeloblasts and endothelial leukocytes is essential. In typical cases of neutropenia the erythrocytes, hemoglobin and platelets are not affected. Of course, a patient may have had an anemia preceding the attack of neutropenia, in which case it cannot be said to be a part of the syndrome. The chief blood picture is the low total leukocyte count and the low percentage of neutrophiles.

There isn't any pathology characteristic of neutropenia except possibly in the bone marrow. The myeloid tissue may be aplastic, normal or hyperplastic. Neutropenia due to roentgen rays, radium, drugs such as benzene, arsphenamine, etc., show hypoplastic or aplastic myeloid tissue. Lesions developing in the mouth, throat, rectum, skin, etc., show necrosis without inflammatory reaction. The spleen may be enlarged, but the pathology in the spleen, when present, is dependent on the predominance of toxic or septic symptoms and not characteristic of the neutropenic state. Cultures and direct smears from the local lesions may show any organisms that happen to be in that locality and may be considered incidental and secondary.

The etiology of neutropenia has been a matter of speculation since 1922. Predisposing causes mentioned are: certain infections and toxins, drugs and chemicals containing the benzene ring, the arsenicals, mesothorium, trinitrotoluene, roentgen rays, and the gamma rays of radium.

Extensive search for an organism which causes a depressant effect on the bone marrow and capable of producing a typical neutropenia has met with little success. Various organisms have been isolated from the blood stream and local lesions of patients suffering with neutropenia. No one organism occurs constantly or even frequently in these cases and when present may be considered incidental and secondary and due to the fact that the protective mechanism of the body, inherent in the neutrophiles, is lost. These organisms have been injected into animals and some of these animals developed leukopenia and neutropenia, but not in a manner entirely comparable to the syndrome seen in human beings. The reaction was more like that of an overwhelming infection.

Dennis[3] thought that focal infections might produce neutropenia. In his experimental work he introduced into rabbits various organisms in a manner intended to simulate a focal infection. Some of the animals developed a leukopenia and neutropenia, but here again the results were more like an overwhelming infection. Focal infections have existed throughout the human era and it does not seem likely that they alone could explain a clinical syndrome which apparently is of very recent appearance. Also, if focal infections were the explanation, it would seem that neutropenia would be of much more frequent occurrence.

There are now over forty cases of neutropenia reported in the literature that followed the administration of arsphenamine. Arsphenamine contains the benzene ring and it is now thought that this benzene ring may be responsible for the neutropenia. It has been known for many years that benzene was a powerful leukocytic depressant. Benzene has been given experimentally to animals and a neutropenia produced.[4]

In my review of benign and malignant neutropenia, published in 1933,[5] and which was written about two years before it was published, I made the following statement: "Since it is known that benzene is a powerful leukocytic depressant and taking into consideration the thirty-nine cases following the use of arsphenamine, it might be possible that any drug containing the benzene ring could be an etiologic factor, such as the many coal tar derivatives on the market which are used by the public indiscriminately. These drugs may serve to weaken the hematopoietic tissue."

The principal drugs containing the benzene ring which are extensively used are the coal tar derivatives, the hypnotics and the drugs used to relieve pain, such as pyramidon (amidopyrine), alurate, sodium amytal, antipyrine, dial, allonal, luminal (phenobarbital) lumodrin, peralga, acetphenitidin, etc.

Kracke[4] observed that eight of nine patients with neutropenia seen by him had taken drugs of the coal tar series prior to the onset of their illness. In a more recent article, Kracke[6] brought out both experimental and clinical evidence to show the connection of these drugs with the neutropenic state. Madison and Squires[7] report on fourteen patients in each of whom the onset of neutropenia was directly preceded by the use of amidopyrine alone or

in combination with a barbiturate. Watkins,[8] at the Mayo Clinic, observed that the majority of his cases of neutropenia were preceded by the taking of either amidopyrine or a barbituric acid derivative. Watkins thinks that these patients have a primary dysfunction of the bone marrow. Randall[9] reports a case of neutropenia which followed the use of barbiturates and amidopyrine. The symptoms were manifest in just a few hours after taking these drugs. Hoffman and his co-workers,[10] in reporting fourteen cases of neutropenia which were preceded by the use of these coal tar drugs, report that one of the cases followed the taking of 100 mgs. of dinitrophenol four times a day for two weeks, which the patient took on her own behest for reduction purposes. This adds another drug to the list of myeloid depressants.

The period of rapid increase in the incidence of neutropenia coincides almost exactly with the increase in the use of drugs containing a combination of amidopyrine with a barbiturate. Also, the majority of cases of neutropenia are reported from Germany and the United States, the two countries in which these drugs are used most extensively. Another interesting observation in this connection is that this syndrome has appeared principally in those people who are most apt to be taking these drugs—physicians, physicians' wives, nurses and patients of physicians. In most instances it has occurred in individuals who have had some type of illness, usually associated with pain, and were under medical care prior to the onset of the neutropenia.

It therefore seems apparent that the bone marrow and blood changes in many cases of neutropenia are the result of the repeated administration of certain drugs containing the benzene ring to which the patient has developed a hypersensitivity. This type of neutropenia is then the result of an allergic or anaphylactoid drug reaction and it would then seem wise for all physicians to keep this type of drug idiosyncrasy in mind, and to restrict the use of amidopyrine alone, or in combination with other drugs, to patients who are in a position to have leukocyte counts several times a week.

At this point it might be well to speak of these drugs in connection with other diseases. We frequently see a patient with a severe infection and a leukocytosis, suddenly developing a leukopenia, and we assume that this is the patient's reaction to an overwhelming infection. In such cases the prognosis is grave. It would then seem wise to not administer these drugs of the coal tar series, known to be myeloid depressants, to patients with severe infections, as, if they have an idiosyncrasy for these drugs, they will be much more likely to develop this leukopenia.

There are some types of neutropenia, however, which are not due to this anaphylactoid drug reaction. I refer to the chronic, non-infectious deficiency neutropenias with moderate secondary anemia and thrombopenia. In these patients there is an intrinsic disorder of the bone marrow in which the neutrophiles do not properly maturate. The granular series of blood cells seem to be checked at the myeloblast-myelocyte stage in the myeloid tissue, supposedly caused by some maturation-inhibiting factor directed against the graular cell series. The author had the opportunity of studying such a case over a period of four years. The case ran a course similar in many ways to that of an untreated case of pernicious anemia, showing attacks and remissions of variable length, finally ending in death. At autopsy the bone marrow grossly looked like the pernicious anemia bone marrow, being reddish brown, very cellular and increased in amount. The granular cells were abundant, but maturation had ceased. In this case there was no history of drugs of the coal tar series or infections preceding the onset. In other words, the etiology in cases of this type is still unsolved.

Other suggestions as to etiology have been: allergy of undetermined origin; congenital and familial anomaly; paralysis of the bone marrow, and endogenous disturbance of production of chemotactic or maturation factors.

There are three main therapeutic measures used at this time: transfusions, irradiation of bones and the nucleic acid derivatives. Such therapeutic measures as fetal liver, extract of bone marrow, leukocytic extract, leukocytic cream, addison and liver extract have been used, but definite results from these agents have been lacking. In fact, until we can reproduce the very same condition in animals, we have no justification for saying that patients recover because of any particular type of therapy. We are sometimes led astray when the patient has recovered after a certain type of treatment. When daily blood smears are studied during an attack of neutropenia, the first change in the blood picture is a monocy-

tosis before the neutrophiles appear in any number. Many patients show this monocytosis before therapy is instituted, showing that a spontaneous recovery or remission was beginning.

There is no specific treatment for the throat, mouth or other local lesions. Mercurochrome or arsenicals are contraindicated. The throat lesions should be treated conservatively with irrigations and an ice collar to the neck, if that gives comfort. It is a mistake to treat any of the local lesions drastically. If the blood picture returns to normal the lesions will tend to heal, and if the blood does not return to normal the patient will die.

Drugs of the coal tar series should never be administered for the purpose of relieving pain or producing sleep in patients having this neutropenic syndrome, because of their depressing effect upon the myeloid tissue in some patients.

Transfusions have not been shown to be of any specific value. They certainly are not indicated if the red cells are normal, and may do harm, as it had been shown that the bone marrow is depressed for sometime after the transfusion. Doan,[11] however, suggests exsanguination-transfusions in cases of neutropenia due to infection.

Roentgen ray, when effective, takes four or five days. If the patient is going to recover in that time they will do so spontaneously. Doan[11] concluded from his experimental work with roentgen rays on myelopoiesis, that a stimulatory dose shows some prior evidence of myelocytic destruction, and he therefore thinks that rotengen treatment is contraindicated whenever a hypoplastic myeloid marrow underlies a given neutropenic state. Therefore, according to Doan, it would not be wise to use roentgen ray treatment unless preceded by a biopsy of the bone marrow to determine whether it was hypoplastic, normal or hyperplastic.

Doan and his co-workers,[12] in their experimental work, found that the split products of nucleic acid, adenine and guanine, would call the neutrophiles from the myeloid tissue and produce a direct leukocytosis. Reznikoff,[13] in 1930, was the first to apply this knowledge clinically, in this syndrome. He reported the administration of adenine sulphate, a nucleic acid derivative, to patients with neutropenia. Jackson and his co-workers,[14] in 1931, reported the use of pentose nucleotide, also a nucleic acid derivative, in cases of neutropenia. Pentose nucleotide is now available commercially. Dameshek[15] thinks that adenine sulphate may possibly be the active principle of the pentose nucleotide.

The administration of pentose nucleotide occasionally gives quite severe reactions, while adenine sulphate is not so easy to administer, but does not give reactions and will give the same results as the pentose nucleotide. Dameshek[15] gives a report of a case of neutropenia treated with pentose nucleotide. The patient had extremely severe reactions during which the white cell count fell progressively to 500. When the more simple nucleic acid derivative, adenine sulphate, was given, no further reactions occurred and the patient showed rapid improvement. One gram of adenine sulphate is dissolved in 35 c.c. of normal saline by boiling. It is given intravenously, in a fairly warm state to prevent precipitation, every eight hours for at least ten doses.

Reich and Reich[16] studied the stimulating and maturative effect of injections of pentose nucleotide on the hematopoietic system of the rat, both with and without benzol depression. They found that injections of normal saline produced results not significantly different from those of the pentose nucleotide. They concluded that their practically negative experimental results cast some doubt on the value of pentose nucleotide in the treatment of neutropenia.

Pentose nucleotide and adenine sulphate have not been demonstrated to be specific. Until we can rule out spontaneous recovery, we have no right to claim specific treatment. However, the mortality rate is reported to be greatly reduced with these two forms of treatment. Some of this reduction in the mortality rate may be due to the fact that more cases are being recognized and diagnosed earlier than formerly; also, some cases may be definitely due to a lack of nucleic acid derivatives in the blood stream, in which case they would be receiving specific treatment.

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Correspondence

What is the Relation Between Influenza and Malaria?

AMELIA, VA., AUGUST 6, 1934.

TO THE EDITOR:

I read with much interest your article for October, 1932, on the work of Sir Ronald Ross with the malarial parasite. There is no doubt whatever that the anopheles mosquito is the infecting agent in malaria.

But our State Health Board has done virtually no anti-malarial work in Amelia County, Virginia. Amelia, along its streams and near its mill ponds, was up to 1918 a terribly malarial ridden section of the State.

At the beginning of the great influenza epidemic, the malaria disappeared almost completely. It is just beginning to appear again after a lapse of nearly sixteen years. Anti-mosquito work had nothing whatever to do with this decline of the incidence of malaria for practically no such work has been done in the County.

Influenza must have established an immunity against malaria among the people.

There is no other way to account for its disappearance.

G. C. EGGLESTON, M. D.

A Correction.

TO THE EDITOR:

In my discussion of the paper on "Endometriosis," by Dr. Goodwin, in the VIRGINIA MEDICAL MONTHLY, August, 1934, on the bottom of page 262, there is a typographical error in which the age of the patient is placed at 48 years, instead of 42 years as it should be.

The difference of six years in the latter part of menstrual life is rather important in this case, as the resection of the bowel was done in preference to the less serious operation of removing the ovaries, partly because the patient desired the preservation of ovarian function.

J. SHELTON HORSLEY, M. D.

Richmond, Va.
August 3, 1934.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during July, 1934, showed the following cases: Typhoid and Paratyphoid Fever, 120; Diphtheria, 40; Scarlet Fever, 67; Measles, 611; Meningitis, 3; Poliomyelitis, 4; Rocky Mountain Spotted Fever, 10; Typhus Fever, 1; Undulant Fever, 1.

Typhoid and Paratyphoid Fever was reported from 46 counties and 9 cities.

The cases of Diphtheria were scattered in 24 counties and 4 cities.

Scarlet Fever cases were reported from 22 counties and 7 cities.

The cases of Measles were scattered in 53 counties and 7 cities.

Epidemic Meningitis was reported from: King George, 1; Nelson, 1; Tazewell, 1.

Poliomyelitis was reported from: Bland, 1; Middlesex, 1; Nottoway, 1; Rockingham, 1.

Rocky Mountain Spotted Fever was reported from the following counties: Albemarle, 1; Caroline, 1; Charlotte, 1; Hanover, 1; Henrico, 1; Prince William, 2; Rockbridge, 2; Surry, 1.

Typhus Fever case was reported from Warren County.

Undulant Fever case was reported from Rockingham County.

DABNEY'S GRIPPE

Approximately 940 cases of so-called Dabney's Grippe have been reported to the State Department of Health from July 1st to August 15th of this year. Thus far, there have been no known deaths. Dabney's Grippe is also known as Epidemic Pleurodynia, Epidemic Transient Diaphragmatic Spasm, and Devil's Grippe. As this is a disease which is not required to be reported to the State, it is believed that there are many more cases existing than there are on record at this time. Many physicians have written to the Department describing what is undoubtedly Dabney's Grippe, and requesting information. As far as can be ascertained, this disease was first reported by Dr. William C. Dabney in 1888.* It was not discussed again until 1923, when in August about 700 cases were reported to the State Department of Health of Virginia with three deaths. It was then described by Drs. Payne and Armstrong.† Sixteen cases of an unknown disease were reported at the Presbyterian Hospital in New York City in June, 1923, with the statement that there were many cases with the same syndrome along the shores of New Jersey.

The characteristic features of the malady seem to be:

1. Sudden onset.
2. Pain referred to the chest or upper abdomen with tenderness along lower ribs, and dyspnea.
3. A rather high fever with a few other general symptoms.
4. A disappearance of pain and fever within twenty-four hours with frequent recurrence on third or fourth day after onset.
5. Speedy recovery.
6. Children are somewhat more frequently attacked than adults.
7. Most cases occur in the summer months.
8. Disease believed to be of an infectious nature (secondary cases within a family are very frequent within a short space of time).
9. Occurs primarily in rural districts.

Prodromal symptoms are usually absent. In fact the patients frequently say that they are feeling well immediately before the onset. Usually patients are able to recall the precise time of the beginning of the pain which is without exception the initial symptom, and which appears without any previous warning. The pain may appear in the lower anterior chest or in the upper mid-epigastrium and each paroxysm is usually sharp and aggravated by deep respiration or by bodily movements. Pain has been synchronous with that of the temperature which may go to 103°, lasting from four to ten hours. As the temperature falls the pain subsides and the patient becomes more comfortable. With the rising temperature there is usually profuse perspiration. The cases of abdominal pain show considerable stiffness of the upper abdomen and differential diagnosis from acute appendicitis is somewhat difficult. Constipation is the rule and most cases complain of headache. There is no cough, coryza, sore throat or expectoration. Lungs always seem clear and friction rub cannot be heard.

Treatment is expectant.

*Dabney, William C. An Account of an Epidemic Resembling Dengue, Which Occurred in and Around Charlottesville and the University of Virginia, in June, 1888, *American Journal of the Medical Sciences*, 1888, Vol. 96, pp. 488-494.

†A Disease of Unknown Etiology, Epidemic in Virginia in 1888 and 1923, Giving Symptoms of Transient Diaphragmatic Spasm, by Drs. George C. Payne and Charles Armstrong. *Journal A. M. A.*, Vol. 81, No. 9, September 1, 1923, pp. 746-748.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

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Invitation to Alexandria.

The Woman's Auxiliary to the Alexandria Medical Society extends a most cordial invitation to all members of the Woman's Auxiliary and to the wives and daughters of the members of the Medical Society of Virginia, to attend the annual meeting to

be held in Alexandria on October 9th, 10th and 11th.

Alexandria is centrally located, with good roads in all directions, several railroads, and is of easy access.

Our plans are for your entertainment and we are looking forward with great pleasure to your coming.

Sincerely yours,

ELLEN HALL HORNTHAL
(MRS. HENRY A. HORNTHAL)
Secretary, Woman's Auxiliary.
Alexandria Medical Society.

P. S. Please, Doctor, be sure to take at least this copy of the MONTHLY home to your wife.

Preliminary News of the 12th Annual Meeting of the Woman's Auxiliary in Alexandria, Virginia.

The Annual Convention fills three important phases in Auxiliary life; it is the crowning event of the year's activities, when the County Auxiliaries gather together the fruits of their labor and present them as a whole to the Medical Society of the State and to its Auxiliary; it marks the glorious beginning of a new year and gives to Auxiliary work a fresh inspiration; it is also the play-time of the Auxiliary, when, by making and renewing friendships in a delightful manner the opportunity is given to more advantageously promote the advancement of health throughout the State.

I urge not only Auxiliary members, but all who are eligible for membership to avail themselves of the privilege of attending this Convention, October 9th, 10th and 11th.

On Wednesday, October 10th, all Auxiliary business meetings will be conducted. The day will begin with the Pre-Convention Board Meeting being held at a breakfast (subscription). Later in the morning at the General Auxiliary meeting all reports for the year will be given. There will be an Auxiliary Luncheon (subscription), during which interesting addresses will be made and a short round-table discussion of Auxiliary problems held. After this, the installation of the new officers will create a fitting climax to an interesting program.

Every woman attending the Convention is cordially invited to the General Meetings and to the Auxiliary Luncheon. Members are urged to be present.

We anticipate the honor of including among our guests; the President of the Auxiliary to the American Medical Association, Mrs. Robert W. Tomlinson, Wilmington, Del.; the President of the Auxiliary to the Southern Medical Association, Mrs. Southgate Leigh, Norfolk, Virginia, who is also a member; members of the Auxiliary to the District of Columbia; also the President of the Medical Society of Virginia, Dr. R. D. Bates, Newtown; the President-Elect, Dr. F. H. Smith, Abingdon; and the members of our Advisory Council, and other distinguished guests.

The hostess Auxiliary is planning a very delightful program of entertainment.

A complete program with the announcement of the Post-Convention Board meeting will be published in the October issue of the Journal.

GERTRUDE M. BURGES HARRIS,
MRS. WILLIAM LETT HARRIS,
President.

The Woman's Auxiliary of the Mid-Tidewater Medical Society

Met at the Country Club of Gloucester C. H., on July 24th. The president, Mrs. Hawes Campbell, Enfield, presided and opened the meeting with prayer. Guest speakers at the meeting were Mrs. Lee E. Sutton and Mrs. Reuben F. Simms, of Richmond, who gave interesting talks on organization and the treasurer's work.

The following committee chairmen were appointed: Social, Mrs. M. H. Harris, West Point; Philanthropic, Mrs. Wm. Gwathmey, Ruark; Legislative, Mrs. J. W. Smith, Hayes Store; Educational, Mrs. Hawes Campbell, Jr., Hanover; Public Relations, Mrs. Clarence Campbell, Sparta; Historian, Mrs. Horace Hoskins, Saluda; County, Mrs. James D. Clements, Ordinary.

After adjournment, this group was delightfully entertained at a luncheon by Dr. H. A. Tabb, Gloucester, and later enjoyed a trip to White Marsh, to the home of Mr. Baruch.

Alexandria—

Our Convention City

When You Come to Alexandria

In October, 1934, for the first time in over fifty years, the Medical Society of Virginia will meet in Alexandria, and her historic doors stand open wide in welcome.

There are many interesting old homes and buildings which you will want to see and, as all of the historically famous spots are in the old section of the city within a few blocks of one another, one or two spare hours will see you through all of them.

Gadsby's Tavern should be on every sightseeing list. The ballroom and beautiful doorway of this building are now in the Metropolitan Museum of Art in New York City. The rest of the building is intact and has been restored by various patriotic societies and citizens of the town who wish to keep Alexandria as she was, a city of personality. Here, at Gadsby's, in 1778, John Paul Jones found LaFayette and Baron de Kalb vainly trying to communicate their wants to the hostlers. Jones stepped in and interpreted for them and there, on the cobblestones of the stableyard, a life-long friendship was established. Gadsby's Tavern is completely furnished today with the beautiful and authentic early American furniture of the Henderson collection. This should be of interest especially to the ladies of the Medical Society Auxiliary for what modern housewife does not thrill at a display of "antiques"? And the gentlemen of the convention would surely be interested in the bar, an exact reproduction of the bars of the period, with its display of bottles and jugs! Many social festivities occurred at Gadsby's and great personages of the country lodged there. Ann Warren, the celebrated actress, died there and was buried in Christ Church yard. The mystery of Gadsby's, and all interesting places have mysteries, was the illness and death of "The Female Stranger." She arrived in the company of her husband and soon after coming died of typhoid. Neither she nor her husband ever divulged their names or past. She was buried in St. Paul's cemetery and the name on her tombstone is—"A Female Stranger."

The Alexandria-Washington Lodge of Masons keeps its lodge rooms open to the public and is well worth visiting. George Washington was made Master of this Lodge in 1788, and the Lodge Museum contains the great chair from which he presided and the famous Williams' portrait which was approved by Washington himself as his best likeness. Here you may see the little silver trowel which was used in laying the



1—Gadsby's Tavern.

2—Another View of Gadsby's Tavern.

3—Masonic Lodge.

4—Another View of Masonic Lodge.

5—Carlyle House.



1—Old City Hotel.

2—Pohick Church.

3—Home of Dr. Brown.

4—Interior Leadbeater's Drug Store.

5—Old Presbyterian Meeting House.

cornerstones of the Capitol of the United States, the Smithsonian Institute, the Washington Monument, and George Washington Masonic National Memorial. The oil paintings hung on the walls of the lodge room were done by such masters as Reynolds, Peale, and many others. Dr. Dick's dueling pistols are here on display. (The Dr. Dick who tended Washington in his last illness.) The doctor, when he turned from The Church of England and became a Quaker, went down to the river and tossed his pistols into the water as testimony of his sincerity. Some admirer, as soon as the doctor's back was turned, dived in and brought them up, and they finally came to be the property of the Lodge.

Leadbeater's Drug Store should have special appeal to the medical profession. Founded by Edward Stabler in 1792, it is the oldest drug store in Virginia and the second oldest in the country. Behind its counters prescriptions were compounded for the Washingtons and Lees, Henry Clay, John Calhoun, Daniel Webster and many others famed in American history. In the old records are many items of interest, one being an order signed by Martha Washington for a certain amount of castor oil. The store is now being restored by the Landmarks Society of Alexandria.

See Christ Church where Washington and Lee worshipped and the old Presbyterian Meeting House in whose churchyard lies the Unknown Soldier of the American Revolution. Dr. James Craik is also buried here. The organ in this church is probably the oldest pipe organ in America in point of service. It is still being used.

When you go to the Carlyle House where the ghosts of early America rustle, be sure to see the wine cellars and dungeons under the building. In this home Washington, George Mason, James Rumsey, of steamboat fame, Thomas Jefferson, Aaron Burr, John Marshall, John Paul Jones, Charles Carroll, of Carrolton, and many others were entertained.

Towering over Alexandria and visible from almost every section of the city is the George Washington Masonic National Memorial. It is not yet completed but is open to the public.

Just eight miles down the beautiful Mount Vernon Memorial Boulevard is the home of the Washingtons which every Virginian knows, but the road is new, following the bends and curves of the Potomac, and is something you should not miss.

And of the newer side of Alexandria—the hotels and tearooms are prepared to put forth their noblest menus for the convention, and a game of golf can be had at the Belle Haven Golf and Country Club.

Alexandria waits to greet you every one!

PROGRAM

MEDICAL SOCIETY OF VIRGINIA

Sixty-fifth Annual Session

Alexandria, Virginia

OCTOBER 9, 10 and 11, 1934

THE GEORGE MASON — *Hotel Headquarters*

SCIENTIFIC PROGRAM

CLINICS

Tuesday, October 9
4:00 to 6:00 P. M.

Thursday, October 11
3:00 to 5:00 P. M.

GENERAL SESSIONS

Tuesday, October 9
8:00 P. M.
Elks Hall

Call to Order—S. B. MOORE, M. D., Chairman, Committee of Arrangements.

Invocation.

Announcements.

Address of President—ROBLEY DUNGLISON BATES, M. D., Newtown.

Memorial Hour.

Address—The General Practitioner's Interest in Rectal Diseases.

HARVEY B. STONE, M. D., Baltimore (Guest).

Wednesday, October 10
9:00 A. M.
Medical and Surgical Sections

Medical Section—Westminister Building

The Treatment of Obesity.

HARRY WALKER, M. D., Richmond.

Reports several cases in which good results have been obtained by use of diet and thyroid extract. Discusses indications for treatment in obesity and reviews newer drugs advised for condition.

Discussion opened by WILLIAM B. PORTER, M. D., Richmond.

Medico-Legal Aspects of Apoplexy.

J. MORRISON HUTCHESON, M. D., Richmond.

As textbooks generally state apoplexy results from bodily stress, the question of accidental cause is important in persons with accident insurance or beneficiaries of Workmen's Compensation. The nature of apoplexy is discussed and illustrative cases presented.

Discussion opened by BEVERLEY R. TUCKER, M. D., Richmond.

A Study of Convulsive Disorders at the University of Virginia Hospital since 1920.

FRANK A. STRICKLER, M. D., University.

By repeated investigations and close follow-ups many patients living outside institutions and continuing their contacts with ordinary life are described. Value of encephalography in diagnosis and treatment is stressed.

The Irritable Colon: A Common Condition, Commonly Misunderstood.

DEWEY DAVIS, M. D., Richmond.

Chronic irritability of colon is usually of neurogenic origin, occurring in vagotonic type of individual. Complete study of physical and nervous makeup and survey of environment necessary in each case. Medical treatment properly administered usually gives satisfactory results.

Discussion opened by OSCAR L. HITE, M. D., Richmond.

Drug Idiosyncrasy and Neutropenia.

REGENA C. BECK, M. D., Richmond.

This paper discusses all drugs known to produce neutropenia. Experimental evidence and clinical data are given.

Discussion opened by HARVEY B. HAAG, M. D., Richmond.

Total Thyroidectomy for Chronic Heart Failure.

DOUGLAS G. CHAPMAN, M. D., Richmond.

Brief review of literature with summary of indications and contra-indications for operation. Mechanism by which heart is relieved through operation is discussed. Case reported and technic described.

Discussion opened by KINLOCH NELSON, M. D., Richmond.

The Diagnosis of Rocky Mountain Spotted Fever of the Eastern Type.

H. B. MULHOLLAND, M. D., University.

A review of the varying clinical manifestations of Rocky Mountain Spotted Fever, Eastern Type, as observed in six cases this summer. Also review of autopsy material.

Discussion opened by KENNETH MANCY, M. D., University.

Surgical Section—Young Peoples Building

Wandering Spleen with Torsion of Its Pedicle: Report of a Case.

J. COLEMAN MOTLEY, M. D., Abingdon.

Case in eight-year-old boy reported because of rarity of condition. Discusses symptoms, diagnosis, treatment and pathology. Reviews literature and gives bibliography of reported cases.

Discussion opened by FRANK S. JOHNS, M. D., Richmond.

Leiomyoma of the Gastro-Intestinal Tract, with Presentation of Two Cases.

R. DUVAL JONES, JR., M. D., Norfolk.

An unusual lesion which may explain hemorrhage or intermittent obstruction of intestines. Pathogenesis uncertain though usually benign. Most frequently occurs in stomach. Diagnosis is by X-ray and treatment surgical.

Discussion opened by CARRINGTON WILLIAMS, M. D., Richmond.

The Cure of Direct Inguinal Hernia (*Illustrated*).

CHARLES R. ROBINS, M. D., Richmond.

The frequent recurrence of hernia following operation seems to persist notwithstanding the numerous operations devised. This suggests a common cause which it is the object of this paper to investigate.

Discussion opened by ROBERT L. PAYNE, M. D., Norfolk.

Further Observations in the Treatment of Acute Head Injuries.

C. C. COLEMAN, M. D., Richmond.

W. G. CRUTCHFIELD, M. D., Richmond.

Importance of viewing every acute head injury as possibly associated with damage to brain. Fracture of skull an uncertain guide. Importance of lacerations of scalp and early adequate treatment based upon pathologic conceptions.

Discussion opened by EDWIN P. LEHMAN, M. D., University.

Fifteen Hundred Spinal Anesthesias with Special Reference to Indications, Complications and Mortality.

J. M. EMMETT, M. D., Clifton Forge.

Review of clinical indications for use of spinal anethesia with discussion of its advantages and disadvantages. Technical safeguards surrounding its use with detailed report of mortalities and operative classification of conditions for which used.

Discussion opened by I. A. BIGGER, M. D., Richmond.

Surgical Treatment of 183 Consecutive Thyroid Cases with No Mortality.

GUY HORSLEY, M. D., Richmond.

This is a review of 183 consecutive thyroid cases treated at St. Elizabeth's Hospital during the past ten years with no mortality. The pre- and post-operative treatment used is given

Discussion opened by C. BRUCE MORTON, M. D., University.

EVIPAL ANESTHESIA.

CHARLES S. WHITE, M. D., Washington, D. C.

J. LLOYD COLLINS, M. D., Washington, D. C.

The advantages, technique of administration, reactions and types of operations in which evipal has been used will be dealt with. Covers an experience with 150 cases.

Discussion opened by J. SHELTON HORSLEY, M. D., Richmond.

Wednesday, 3:00 P. M.
Westminister Building

Problems in Breast Feeding.

JOHN S. WEITZEL, M. D., Richmond.

The great percentage of mothers unable to supply the proper quality or quantity of breast milk is cited and an attempt made to locate the causative factor. A detailed discussion of the anatomic, histologic and economic phases of the problem is given.

Discussion opened by THOMAS D. JONES, M. D., Richmond.

Gas Bacillus Infections: A Study of the Incidence, Treatment, and Mortality (*Illustrated*).

H. J. WARTHEN, M. D., Richmond.

An analysis of thirty-five cases of gas bacillus infection treated in the Medical College of Virginia hospitals, with special reference to the use of gas gangrene antitoxin.

Discussion opened by H. B. HOLSINGER, M. D., Farmville.

Symposium on Medical Economics

Medical Education, Specialization, and the Private Practitioner.

J. C. FLIPPIN, M. D., University.

Insurance, Hospital and Sickness.

WALTER B. MARTIN, M. D., Norfolk.

Federal, State, County and Municipal Relations to Medicine and the Care of the Indigent Sick.

I. C. RIGGIN, M. D., Richmond.

General View of the Whole Program.

EDGAR SYDENSTRICKER, Director, Public Health Activities, Milbank Memorial Fund (Guest).

Discussion to be opened by W. L. POWELL, M. D., Roanoke.

Wednesday, 8:00 P. M.
Westminister Building

Colles' Fracture (*Illustrated*).

M. H. TODD, M. D., Norfolk.

After adequate reduction there is no special tendency to displacement. Splintage should permit free motion and light usage of fingers and thumb from first. Palmar displacement of ulna should be corrected. Splintage should be frequently inspected.

Discussion opened by H. PAGE MAUCK, M. D., Richmond.

Experience with an Efficient Method of Operation for Hemorrhoids, Adapted to General Practice in Rural Districts.

J. H. HIDEN, M. D., Pungoteague.

Operation adapted to defeat the quack in this field, meet economic necessities, simplify a radical removal with a new technique, easily carried out with relative safety and with least discomfort to the patient.

Discussion opened by H. L. DENOON, M. D., Nassawadox.

The Neuropathology of Pellagra in Its Relation to the Cutaneous and Other Manifestations.

BEVERLEY R. TUCKER, M. D., Richmond.

This paper deals with the examination of brains, cords, and sympathetic ganglia of pellagra patients and points toward the possibility of pellagra being due to a virus infection rather than dietary deficiency.

Discussion opened by S. D. BLACKFORD, M. D., University.

The Cystic Kidney (*Illustrated*).

JOSEPH F. GEISINGER, M. D., Richmond.

Consideration of the nature, characteristics, clinical picture and treatment of true renal cystic disease, with brief reports of eight cases illustrating various types.

Discussion opened by LINWOOD D. KEYSER, M. D., Roanoke.

Brain Tumors in Children (*Illustrated*).

J. G. LYERLY, M. D., Richmond.

Early symptoms and signs of some of most frequent types of intracranial tumors are emphasized, and some of more frequent pathological types of tumor found in children are discussed with report of illustrative cases.

Discussion opened by HOWARD R. MASTERS, M. D., Richmond.

Thursday, October 11
9:00 A. M.
Westminister Building

Anemias Dependent upon Food Deficiencies.

JAMES P. BAKER, M. D., Richmond.

A concept of pernicious anemia, sprue, idiopathic hypochromic anemia and other anemias as being dependent upon deficiencies of intake, metabolism or absorption.

Discussion opened by WILLIAM H. HIGGINS, M. D., Richmond.

Some Extra-uterine Complications of Pregnancy.

H. HUDNALL WARE, M. D., Richmond.

A review of the diagnosis and treatment of some complications of pregnancy, including cases with acute infections, thyroid dysfunction and complications requiring surgical intervention.

Discussion opened by GREER BAUGHMAN, M. D., Richmond.

Venous Pressure and Body Weight Determinations in Congestive Heart Failure (*Illustrated*).

J. EDWIN WOOD, M. D., University.
GEO. D. CAPACCIO, M. D., University.
WILLIAM WEAVER, M. D., University.

Venous pressure values, their significance in cardiac failure, application of this method, and importance of body weight determinations in the treatment of any case of congestive heart failure are discussed.

Discussion opened by ALEX. F. ROBERTSON, JR., M. D., Staunton.

Pathological Lesions Correctly Diagnosis by Roentgenologic Methods and Later Missed at Surgical Exploration.

CLAUDE MOORE, M. D., Washington, D. C.

It is becoming evident that surgical exploration will not disclose all pathologic lesions found by the radiologist unless the viscus is opened and the mucosa actually inspected.

Discussion opened by C. BRUCE MORTON, M. D., University.

Vomiting in the Newborn, with Special Reference to Congenital Occlusion of the Duodenum: Report of Two Cases.

THOMAS D. WALKER, JR., M. D., Newport News.
W. W. FALKENER, M. D., Newport News.
J. SHELTON HORSLEY, M. D., Richmond.

The importance of prompt surgical intervention is stressed in cases requiring differentiation between congenital stenosis of the pylorus and congenital obstruction of the duodenum.

Discussion opened by W. P. MCDOWELL, M. D., Norfolk.

Collapse Therapy in Pulmonary Tuberculosis (*Illustrated*).

J. B. NICHOLLS, M. D., Catawba Sanatorium.
L. R. BROOME, M. D., Catawba Sanatorium.

Discusses technic and results of artificial pneumothorax, with internal pneumolysis as an aid. Considers selection of cases for phrenicotomy and recent improvements in and indications for thoracoplasty.

Discussion opened by E. C. DRASH, M. D., University.

ANNOUNCEMENTS

Registration and Information Bureau
Hotel George Mason

Dues may be paid at Registrar's desk. Please advise Registrar of any change of address.

SCIENTIFIC SESSIONS

Elks Hall—318 Prince Street.

Westminister Building—St Asaph and Prince Streets.

Young People's Building—Opposite George Mason Hotel.

BUSINESS SESSIONS

Council—Tuesday, October 9, at 11:00 A. M., in Room 316, George Mason Hotel.

House of Delegates—Tuesday, October 9, at 1:45 P. M., Small Dining-room, George Mason Hotel.

EXHIBITS

Scientific—Public Service Building.

Commercial—George Mason Hotel.

GOLF TOURNAMENT

Tuesday, October 9. Players are asked to bring their State or Club handicaps.

WOMAN'S AUXILIARY

Belle Haven Country Club.

Proposed Changes in Constitution

As there is need of a new supply of copies of the Constitution and By-Laws of the Medical Society of Virginia, our President, Dr. R. D. Bates, recently appointed a committee composed of Dr. P. St. L. Moncure, Dr. J. Allison Hodges and Dr. J. C. Flippin to decide upon amendments they thought would be practical, that they might be presented to the House of Delegates at our Alexandria meeting. As it is necessary that amendments to the Constitution shall be published in the official publication of the Society at least a month before the annual meeting, we give amendments offered by the Committee. The words or sentences in brackets indicate omissions from the old Articles of the Constitution and italics indicate additions or new words suggested. If members desire copies of the Constitution now in use, they may be had upon request.

No change in Articles I, II, III and IV.

Article V. HOUSE OF DELEGATES

The House of Delegates shall be the business and legislative body of the Society, and its membership shall consist of the delegates elected by the component societies, the President, the President-elect and (ex-officio) the (ten) members of the Council. (The Executive Secretary-Treasurer of the Society shall be an ex-officio member.)*

(A report of the transactions of the House of Delegates shall be received at a general meeting of the Society before the close of the annual session).*

Article VI. COUNCIL

The Council shall have charge of the business affairs of the Society when the House of Delegates is not in session, and shall preparae and present a budget for the ensuing year to the House of Delegates at its first session. The Council shall consist of one member from each Congressional District of the State, together with the President and President-elect. (The Executive Secretary-Treasurer of the Society shall be an ex-officio member of the Council.)*

Article VII. OFFICERS

The officers of the Society shall be a President, a President-elect who shall succeed to the Presidency (at the end of the term) *the following year,* three Vice-Presidents, and the Executive Secretary-Treasurer. The office of the Executive Secretary-Treasurer may be held by a non-member.

The officers shall be elected during the annual session of the House of Delegates, and will begin service at the adjournment of the annual session and continue until the end of (the) *that* term, or until a successor qualifies. The term of office shall be for one year.

Article VIII. STANDING COMMITTEES

The Standing Committees of the Society shall be: [(1) Scientific Work and Clinics; (2) Legislation and Public Health; (3) Publication and Program; (4) Medical Economics; (5) Medical Education and Hospitals; (6) Membership and (7) Ethics and Judiciary.] (1) *Publication and Program;* (2) *Scientific Exhibits and Clinics;* (3) *Department of Clinical and Medical Education;* (4) *Legislation;* (5) *Medical Economics;* (6) *Membership;* (7) *Ethics.*

Article IX. TRUST FUND FOR POST-GRADUATE CLINICAL EDUCATION

The last five living ex-presidents shall constitute a special committee to collect and hold in trust the post-graduate fund of the Society. *The retiring president shall be chairman.*

Article X. ANNUAL SESSION

There shall be an annual session of the Society and the date and place of the meeting shall be determined by the House of Delegates, *but at its discretion, these may be selected by the Council.*

No change in Articles XI, XII, XIII and XIV.

*Taken care of in By-Laws.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Carbide and Carbon Chemicals Corporation.
Triethanolamine-Carbide and Carbon Chemicals Corporation.

Lakeside Laboratories, Inc.
Ampoules Dextrose (d-Glucose) 50 Gm., 100 c.c.

Eli Lilly & Co.
Ampoules Glucose (Dextrose, U. S. P.) Lilly, Unbuffered, 25 Gm., 50 c.c.
Ampoules Glucose (Dextrose U. S. P.) Lilly, Buffered, 25 Gm., 50 c.c.
Ampoules Glucose (Dextrose, U. S. P.) Lilly, Unbuffered, 50 Gm., 100 c.c.

Sharp & Dohme, Inc.
Ivyol-Poison Ivy Extract-Mulford, one syringe package.

Virginia Medical Monthly

Founded by LANDON B. EDWARDS, M. D., April, 1874
Owned by MEDICAL SOCIETY OF VIRGINIA since November, 1919
WYNDHAM B. BLANTON, M. D., *Editor*
AGNES V. EDWARDS, Richmond, *Business Manager*

PUBLICATION COMMITTEE
WYNDHAM B. BLANTON, M. D., Richmond, *Chairman*
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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 1200 East Clay Street, Richmond, Va.

This journal is not responsible for the opinions and statements of its contributors.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance. Single Copies 25c.

VOLUME 61 SEPTEMBER, 1934 No. 6

Editorial

An Appraisal.

It has been recognized for a long time that the scientific output of medicine of the world today far surpasses the ability of any one person to grasp. It is safe to say also that much of what has been produced in the name of science is of ephemeral value and that no small part of it utlimately will prove to be grossly incorrect. It becomes important therefore to constantly sift the true from the false and to discover if possible what are the really worth while and lasting contributions to medicine in the age in which we live. The pursuit and mastery of these genuine advances will keep the average man more than busy thinking, reading and personally verifying.

With some such idea in mind we have collected and printed elsewhere in this number of the MONTHLY the opinions of several well-known American internists concerning what constitute the real strides of medicine within the past decade.

These opinions are of surprising unanimity. Most are agreed that the cure of pernicious anemia by liver therapy, and the new field that that discovery has opened up, represents the most noteworthy advance. Of hardly less importance is our increased and increasing knowledge of endocrinology—insulin, cortin, parathormone—as well as the newer knowledge concerning female sex hormonolgy. Toxoid in the prevention of diphtheria, the surgical treatment of pulmonary tuberculosis and the appreciation of the importance of vitamin factors in such diseases as pellagra constitute further evidence of recent lasting achievement in the large field of internal medicine.

Infectious Pleurodynia.

In the November issue of the *American Journal of the Medical Sciences* for 1888, Professor William C. Dabney, of the University of Virginia, described for the first time a "new disease" under the title: *An Account of an Epidemic Resembling Dengue.* The epidemic prevailed in and around Charlottesville and at the University, and no less than fifty cases were observed. In discussing the disease, Dr. Dabney wrote:

> In every case which I saw the onset was *sudden* and usually violent. . . . The pain, however, was, by far, the most striking feature. . . . In character it was sharp and lancinating, and was much more violent when the patient attempted to move or to draw a deep breath. (So agonizing was this pain that it was nicknamed the "devil's grip" by a sufferer from the disease in Rappahannock County, Virginia, and this name became a common one there, afterward, as I was told by Dr. W. F. Cooper). . . . The pain was usually in the left side of the chest just below the nipple, but in some cases there was pain in the opposite side, or in the shoulder of the opposite side; and in a few cases, especially in children, there was pain in the abdomen, usually in the epigastric region. . . . *Headache* occurred in nearly every case and was usually severe. *Backache* was present in about half of the cases. The respirations were slightly increased in frequency in every case, and were rather shallow, but this increase seemed to be due entirely to the pain caused by drawing a deep breath. There was no cough, and no expectoration, nor were there any evidences of disease to be found on physical examination. . . . The digestive symptoms were, as a rule, not marked.

. . . There was more or less fever usually ranging from 102° to 104°. . . . I have already mentioned the most prominent of the cutaneous symptoms—the pungent heat of the skin."

In these words Dr. Dabney gave the first description of infectious pleurodynia, commonly called "devil's grip." At this time when an epidemic of some proportions has been reported from various parts of the state it is interesting to recall how the disease got its name and who first recognized it as a clinical entity.

Where Practice Does Not Make Perfect.

A grandmother ceases to worry over the parturient daughter who has passed safely through a first labor. As medical students we were assigned multiparae by preference and given certain freedom in their management under the assumption that it was safer for third and fourth year men to handle them than women in their first labor. It must come therefore as something of a surprise to the general run of practitioners to be told that the idea is fallacious that a primigravida implies a difficult labor and a multipara an easy one. Bethel Solomon punctures this belief in a contribution to a recent number of *The Lancet* by convincingly demonstrating that the mortality among multiparae is higher than it is among primigravidae. The reasons assigned for this surprising conclusion are (1) the grave obstetrical problem presented by the pendulous abdomen of women who have borne children; (2) the greater danger to them from eclampsia, probably incident to older kidneys; (3) the far greater frequency of accidental hemorrhage; (4) the much higher incidence of placenta praevia; (5) a peculiar liability to adherent placenta and ruptured uterus; (6) the likelihood that, in spite of a previous normal delivery, a multipara may develop complications incident to disparity in the size of the baby and the pelvic outlet; and finally (7) "failed forceps" which may occur whether a woman is in her first or a later pregnancy.

Department of Clinical Education of the Medical Society of Virginia

Obstetrical Program Draws to a Close.

The Joint Committee on Prenatal and Postnatal Instruction, representing the three medical education agencies of the State was set up by the Medical Society of Virginia at Roanoke in 1931 as a subordinate branch of its Department of Clinical Education. Three annual appropriations unanimously voted by the Society amounting to a total of $6,000, and grants from the Commonwealth Fund of $15,000 have supplied most of the funds for this intensive program. Enrollment fees at five dollars per student were relied upon to complete the budget and meet about one-eighth of the cost. With this support fifty classes having a total membership of 594 physicians have already been held.

The third appropriation was made by the Medical Society at Lynchburg last fall with a view to continuing the program so that the opportunity of a class might be offered to every society which desired it. With the end of the tenth circuit in the week of September 10th, this phase of the educational program of the Medical Society of Virginia will come to a close.

The work has been successful beyond the highest anticipation of its proponents three years ago. The unanimous appropriations of funds by the Medical Society, the approval of fifty-four organized or especially formed medical groups in the State, the attendance rate of over 75 per cent on the part of members, and the written comment by over three hundred of the members that the course was well worth the cost in time and money as against six opinions to the contrary—all these are indications of the response to and effectiveness of the work. The credit for this success belongs largely to the Field Clinician, Dr. Maxwell E. Lapham, who has proved to be exactly the type of physician and teacher needed for this service.

Half-Way Mark in the Tenth Circuit

The tenth and last circuit of courses in prenatal and postnatal instruction, with five meetings completed, has already a creditable record and a per-

centage rate of enrolled members equal to the average of all the classes conducted. Thirty-six enrolled members and twenty-five visitors have attended the classes in Alexandria, Fairfax, Fredericksburg, Culpeper and Orange, with an average of 12.2 in attendance at each meeting. The percentage of attendance of enrolled members was 76.1.

OBSTETRICAL HISTORY CARDS ON HAND

When Dr. Lapham's classes are finished in September, there will be on hand several packages of obstetrical history cards like the ones distributed to members of the classes. Interested physicians may obtain limited supplies as long as they last from the Extension Division, Box 1487, University, Va. One evidence of interest in the courses in prenatal and postnatal care has been the continued requests for such materials from physicians who were enrolled in the classes.

Experimental Pediatric Clinic.

Because of the expressed desire for work in pediatrics by many of the physicians who were enrolled in the Joint Committee's courses, the Department of Clinical Education is trying to arrange at least one experimental short course during this Society year.

With the funds appropriated by the Medical Society at its last meeting for this purpose, and supplemented by other help, the Department of Clinical Education expects to offer a pediatric clinic in cooperation with one or two medical societies in the state during the first two weeks of September. Since the available resources are not enough to promote a statewide program now, the plan is to have one especially good two weeks' course under the instruction of the ablest clinician who can be found in the medical centers to the north and west.

It is hoped that this work may serve as a worthwhile demonstration of what can be done, and that interest will be stimulated to seek the means necessary for further work in this or other subjects which may appeal to the physicians of the state.

The entire course may be given in one center, or meetings may alternate between two centers. The subjects to be considered will be developed by the clinician in conjunction with the members of the groups. A nominal fee of two dollars will be charged for the entire course of ten meetings. Each meeting will be approximately two hours in length, the first hour for lectures and the second for clinical demonstrations and round-table discussions. In his out-of-class hours the clinician will be available for private consultations with enrolled members.

Plans for this pediatric clinic are rapidly taking shape, and it is hoped that the work may be successfully completed and a report of it submitted in the next issue of the MONTHLY.

Proceedings of Societies

Augusta County Medical Association.

The annual business and social session of this Association was held at Blue Ridge Terrace, near Afton, Va., on August 1st, with an attendance of thirty-five. Dr. H. T. Hawkins, Waynesboro, read his presidential address, the subject being "Some Problems in Industrial Works." A number of clinical cases were also reported. Two doctors were elected to membership and a couple of applications were received. Dr. R. S. Griffith, Waynesboro, and Dr. Frank M. Hanger, Staunton, both having practiced for over fifty years, were elected to honorary membership.

Officers elected for the ensuing year include: President, Dr. C. P. Obenschain, Staunton; vice-presidents, Drs. W. A. Murphy, C. W. Rodgers and Chalmers Wills, all of Staunton; treasurer, Dr. T. M. Parkins, Staunton; secretary, Dr. W. F. Hartman, R. F. D., Staunton (the last two re-elected). Dr. H. T. Hawkins was elected a trustee, and Dr. C. P. Obenschain delegate to the annual meeting of the State Society. The next meeting will be on the fourth Wednesday in November.

The Mid-Tidewater Medical Society

Held its regular quarterly meeting at Gloucester C. H., Va., on July 24th, at the home of Dr. H. A. Tabb, with an attendance of twenty-four members and guests. The president, Dr. Robert Hoskins, Mathews, presided. Papers were presented by Drs. Lawrence T. Price, Reuben F. Simms, and F. S. Johns, all of Richmond, and these were freely discussed by visitors and members. Other visitors were

Drs. D. G. Chapman, A. I. Dodson and Dean Cole, of Richmond, and Dr. Wright Clarkson, of Petersburg. Members present were Drs. E. C. Cobb, R. D. Bates, J. M. Gouldin, E. L. W. Ferry, Hawes Campbell, Robt. Hoskins, W. E. Croxton, Malcolm H. Harris, A. Warner Lewis, Jas. D. Clements, H. F. Hoskins, Harry A. Tabb, J. R. Parker, W. Percy Jones and James W. Smith, and two Gloucester pharmacists.

The Society elected its vice-presidents as delegates to the meeting of the State Society in Alexandria in October, they to name their alternates if needed. Following the meeting, the Gloucester doctors entertained the visitors and members at a delightful luncheon in Dr. Tabb's home. The next meeting will be on the fourth Tuesday in October at Millers Tavern.

News Notes

Come Meet With Us—

PLACE—Alexandria, Virginia.

TIME—October 9, 10 and 11, 1934.

OCCASION—Sixty-fifth annual meeting of the Medical Society of Virginia.

For the first time in over fifty years, our Society is meeting in Alexandria, this Fall, and we want to do credit to the occasion by having a large turnout of members and visitors. The program promises papers on a number of interesting subjects, including one by Dr. Harvey B. Stone, prominent surgeon of Baltimore. The other guest, Edgar Sydenstricker, Director of Public Health Activities, Milbank Memorial Fund, will be one of the speakers in the symposium on Medical Economics. Clinics are also being planned and these are always an attraction.

In other departments of this issue of the MONTHLY will be found the Preliminary Program and an interesting statement as to points of interest in and around Alexandria. There will be excellent scientific and commercial exhibits and matters of importance are to be discussed in the House of Delegates.

For the golfers, there will be the usual tournament. This has been scheduled for Tuesday, October 9th, at 1:30 P. M., at Belle Haven Country Club. Those who expect to participate are asked to bring their State or Club handicaps with them.

Wives and daughters of doctors are given a most cordial invitation to attend, whether or not members of the Woman's Auxiliary.

The George Mason is hotel headquarters and those who count on attending should make reservations promptly.

There is much to be gotten in the way of good fellowship as well as in a scientific way at these meetings, and we urge members to attend.

Interesting Meeting in November.

The International Assembly of the Inter-State Post-Graduate Medical Association of North America will be held in the Public Auditorium, Philadelphia, Pa., November 5-9, 1934. Many distinguished teachers and clinicians will appear on the program. A major list of the names of the contributors to the program, with other information, appears on advertising page 19 of this journal.

All members of the Medical Society of Virginia are cordially invited to attend. Registration fee of $5.00 admits all members of the profession in good standing.

Dr. Harry G. Hudnall,

Class of '31, University of Virginia, has completed his fellowship at the Cleveland Clinic and is now located for practice in Covington, Va. He is associated with his father, Dr. B. Ryland Hudnall.

Dr. Caleb S. Stone, Jr.,

For a time located at Farmville, Va., recently finished a research fellowship in surgery at the University of Virginia and has moved to Santa Barbara, Calif., where he is engaged in the practice of surgery.

Dr. Clarence E. Arnette,

An alumnus of the Medical College of Virginia, class of '33, upon completion of his internship at Garfield Memorial Hospital, Washington, D. C., in June, located in Alexandria, Va., with offices in Barrett Building. He is engaged in general practice.

Married.

Dr. Booker Lee and Miss Nellie Estelle Lindsay, both of Pulaski, Va., June 20th.

Dr. Charles Lorraine Cabell, class of '34, University of Virginia, and Miss Elizabeth deVega Danford, University, Va., July 28th. They are making their home in Richmond where Dr. Cabell is interning at Memorial Hospital.

Mr. William Benjamin Hubbard, Covington, Va., and Miss Mary Lee Carter, daughter of Dr. and Mrs. B. L. Carter, of Blue Spring Run, Va., July 16th.

Dr. R. Angus Nichols, Sr., and Miss May Garmichael, both of Richmond, Va., August 15th.

Dr. R. N. Hillsman, Jr.,

Class of '33, University of Virginia, Department of Medicine, having completed one year rotating surgical internship at the University Hospital, has located at Amherst, Va., where he is engaged in general practice.

Dr. Jethro M. Hurt

Has located in Blackstone, Va., for the general practice of medicine. He is an alumnus of the University of Virginia, class of '33, and recently completed an internship at St. Elizabeth's Hospital, Richmond, Va.

Dr. W. W. Cleere,

Hopewell, Va., was elected chairman of the board of directors of the Prince George County Cotton Control Association, organized at Hopewell, the middle of August.

Dr. Joseph F. Phillips,

Of the class of '33, Medical College of Virginia, who interned at St. Joseph's Hospital, Pittsburgh, Pa., last year, has located for general practice in Newport News, Va., with offices at 2501 Chestnut Avenue.

Dr. A. I. Dodson,

Richmond, Va., by invitation, addressed the Third District Medical Society of North Carolina, at their meeting in Southport, on July 27th. His subject was The Management of Prostatic Obstructions.

The American Congress of Physical Therapy

Is holding its annual session at the Bellevue Stratford, in Philadelphia, Pa., September 10th-13th. Dr. Albert F. Tyler, Omaha, Nebr., is president, and Dr. Nathan H. Polmer, New Orleans, secretary.

Dr. William B. Carpenter,

Recently at Grace Hospital, Richmond, Va., has located for general practice at New Hope, Va. He is a member of the class of '33, University of Virginia.

Dr. F. C. Warnshuis,

For a number of years secretary of the Michigan State Medical Society, is retiring from this office on September 15th and is leaving Michigan to assume the duties of Secretary-Treasurer of the California Medical Association on October 1st. To those who attend meetings of the American Medical Association, Dr. Warnshuis is well known as Speaker of the House of Delegates of that organization.

Dr. Norman E. Tylar,

Formerly of Petersburg, Va., and an alumnus of Georgetown University Medical School, has located in Hopewell, Va., where he is assistant to Dr. D. Lane Elder, with offices in Elder Building. He succeeds Dr. Albert T. Brickhouse, who has been made physician for the CCC Camp at Cape Henry, Va.

The Southern Medical Association,

According to custom, will hold its annual meeting in November. San Antonio, Texas, the convention city, extends a cordial invitation for all who can to attend. Every Southern physician who is a member of his State and county medical societies is eligible to membership. The dates are November 13th-16th, and this year's president is Dr. Hugh Leslie Moore, of Dallas, Texas. There will be a post-convention trip to Mexico and information about this may be obtained from the secretary-manager of the Association, Mr. C. P. Loranz, Empire Building, Birmingham, Ala.

Dr. J. L. DeCormis,

Accomac, Va., has been re-appointed a member of the Accomac County School Electoral Board for the appointment of school trustees.

Dr. Herbert C. Jones,

Petersburg, Va., has been appointed assistant city coroner of Petersburg. Dr. E. L. McGill is coroner.

Dr. Zack P. Mitchell,

Weldon, N. C., was recently elected health officer of Vance County, North Carolina. Dr. Mitchell is an alumnus of the Medical College of Virginia.

Dr. Gibson C. Engel,

Surgeon to the Lankenau Hospital, Philadelphia, was guest speaker at the regular meeting of the Medical Society of Northern Virginia, August 14th. The meeting was held at White Post, Va., with Dr. C. O. Dearmont of that place as host.

Dr. James T. Jackson,

Recently of Ashburn, Va., has become chief resident in surgery at Garfield Memorial Hospital, Washington, D. C., having entered upon these duties on July 1st.

The Medico-Military Symposium

For Medical Department Reserve Officers of the Army and Navy will be held for the fifth year at the Mayo Clinic, Rochester, Minn., October 7th-20th, inclusive. As in former courses, the morning hours will be devoted to attending clinics on subjects selected by the student officers, and the afternoon and evening hours will be given over to work in Medico-Military subjects. The general motif of the Medico-Military part of the Symposium will be "Public Health and Its Relation to National Defense." A splendid program of a thoroughly practical nature has been compiled and the speakers selected for their ability to prevent authoritatively the subjects assigned. Those who attend the course for full or part-time will receive credit for the hours spent in training.

Detailed information should be obtained from the Corps Area Surgeon, Seventh Corps Area, Omaha, Nebraska, or the District Medical Officer, Ninth Naval District, Great Lakes, Ill.

Dr. Hight C. Warwick

Has located in Greensboro, N. C., where he will be engaged in general practice in association with Drs. C. M. Gilmore and P. A. Shelburne. All of these doctors are alumni of the Medical College of Virginia.

Dr. C. B. White,

Halifax, Va., has been appointed part-time health officer for Halifax County, Va., and will continue his private practice also. He succeeds Dr. S. D. Gardner, resigned, who is now first lieutenant and camp surgeon at a CCC Camp at Wilderness, Va. Dr. Gardner has been health officer in Halifax County for the past two years.

Dr. Carroll B. Robertson,

Who interned at St. Vincent's Hospital, Norfolk, Va., after graduating from the Medical College of Virginia in 1933, has located in Jackson, N. C., where he is engaged in general practice.

List of New Books in the Library of the Medical College of Virginia.

The following new books in the Library of the Medical College of Virginia are available to our members, return postage being the only cost:

Allen, Hervey—Anthony Adverse.
A. M. A.—Primer on Fractures. 3rd ed. Annual Review of Biochemistry (1934).
Barclay, A. E.—The Digestive Tract.
Bauer, W. W.—Contagious Diseases.
Becker, E. R.—Coccidia and Coccidiosis of Domesticated, Game and Laboratory Animals and of Man.
Brett, W. R.—Short History of Some Common Diseases.
Buck, Pearl—Good Earth.
Burr, Anna Robeson—Weir Mitchell, His Life and Letters.
Celli Angelo—History of Malaria in the Roman Campagna.
Cobb, Irvin—Irvin Cobb At His Best.
Cole & Bigelow—A Manual of Thesis Writing.
De Vries, W. M.—Atlas of Selected Cases of Pathological Anatomy.
Delmege, J. A.—Towards National Health.
Dodds, G. S.—Essentials of Human Embryology.
Doyle, A. Conan—Complete Sherlock Holmes.
Durant, Will—Story of Philosophy.
Feinberg, Samuel M.—Allergy in General Practice.
Filipiev, I. N.—The Classification of the Free-living Nematodes and Their Relation to the Parasitic Nematodes.
Fishbein, Morris—Shattering Health Superstitions.
Fraenkel & Thauer—Strophanthin Therapy.
Franklin, K. J.—A Short History of Physiology.
Gadow, H. F.—The Evolution of the Vertebral Column.
Glasser, Otto, ed.—The Science of Radiology.
Gleason, Edw. B.—Manual of Diseases of the Nose, Throat, and Ear.
Grenfell, W. T.—Labrador Doctor.
Haggard, Howard W.—Mystery, Magic and Medicine.
Hemingway, Ernest—Farewell to Arms.
Ingleson, H.—The Action of Water on Lead, etc.
Joslin, E. P.—Diabetic Manual.
Kovacs, Richard—Nature, M. D.
Lewis, Sir Thomas—Clinical Disorders of the Heart Beat.
Loebel, Josef—Medicine.
Medical Research Council—Special Report Series No. 188—Committee Upon the Physiology of Vision.
Mellanby, May—Diet and the Teeth.
Meyer & Gottlieb—Die Experimentelle Pharmakologie als Grundlage der Arzneibehandlung.
Munthe, Axel—Story of San Michele.
Ormsby, Oliver S.—Diseases of the Skin. 4th ed.

Osborne & Fishbein—Handbook of Therapy.
Parsonnet & Hyman—Applied Electrocardiography.
Peterson, H.—Huxley, Prophet of Science.
Putnam, Ruth—Mary Putnam Jacobi, Life and Letters.
Remarque, E. M.—All Quiet on the Western Front.
Rivera, Diego—Portrait of America.
Rogers, Will—Ether and Me, or Just Relax.
Rowe, Allan W.—Differential Diagnosis of Endocrine Disorders.
Seldes, George—Iron, Blood and Profit.
Sherrington, Charles—The Brain and Its Mechanism.
Stokes, J. H., et als.—Modern Clinical Syphilology (1934 ed.)
Pemberton & Osgood—The Medical and Orthopedic Management of Chronic Arthritis.
Vaughan, J. M.—The Anemias.
Wistar Institute Style Brief.
Wittels, Fritz—Sigmund Freud.
Wright, Samson—Applied Physiology. 5th ed.

For Sale—

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Obituary Record

Dr. Francis Thomas Ridley,

Well-known physician of Bluefield, W. Va., died on July 20th, death being due to heart disease from which he had suffered for several months. Dr. Ridley was a native of Portsmouth, Va., and about fifty-two years of age. He received his medical education at the University of Virginia, graduating from that institution in 1903. He practiced for a time in the western part of Virginia before locating at Bluefield. Though a member of his State medical association, he had also continued his membership in the Medical Society of Virginia. His wife survives him.

Dr. Rudolf Bolling Teusler,

Formerly of Richmond, Va., but for more than thirty years a medical missionary in Tokyo, Japan, where he founded and directed St. Luke's International Hospital, died there on August the 10th, his death being due to a heart affliction. Dr. Teusler was fifty-eight years of age and graduated from the Medical College of Virginia in 1894. He practiced in Richmond until 1900 at which time he went to Tokyo. Dr. Teusler had been honored by a number of organizations and was recently recipient of the honorary degree of Doctor of Science from the Medical College of Virginia. His wife, also a former Richmonder, and several children survive him.

Dr. Archibald E. Baker,

Prominent surgeon of Charleston, S. C., and founder and surgeon-in-chief of Baker Sanatorium in that city, died suddenly on July 31st, at his summer home on Folly Island, S. C. He was seventy-one years of age and a graduate of the Medical College of the State of South Carolina in the class of '89. He was a former president and interested member of the Tri-State Medical Association of Virginia and the Carolinas.

Dr. William A. Johnston,

Roanoke, Va., died at his home in that city on May 30th, after a long illness. He was seventy-one years of age and had graduated in medicine from the College of Physicians and Surgeons, Baltimore, in 1881.

Dr. Warren Brown Hill,

Rectory, Va., aged seventy-two years, died May 13th, as the result of cancer. He was a graduate of the Baltimore University School of Medicine in 1892.

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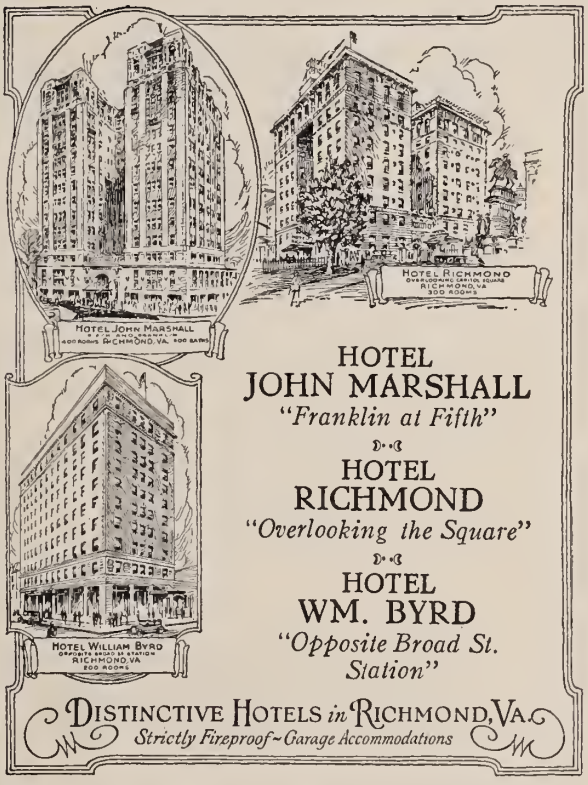
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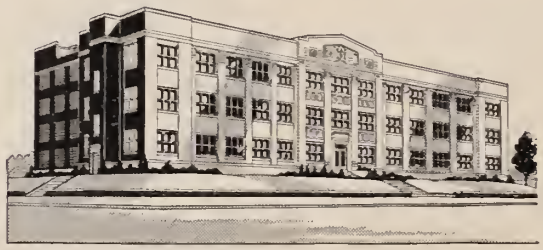
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TUMORS OF THE SYMPATHETIC NERVOUS SYSTEM.*

DEAN LEWIS, M. D.,
Baltimore, Md.

Tumors of the sympathetic nervous system are protean in their clinical manifestations and differ considerably in their histological appearance. Arising from the same stem cell, depending upon the differentiation, these tumors may be exceedingly malignant or benign. Between the two extremes are tumors which, although malignant histologically, pursue a relatively benign course. The tumors develop from neuroblasts (sympathogonia) which wander out from the neural crest to form the sympathetic nervous system. The tumors, depending upon the amount of differentiation, are called neuroblastomas, paragangliomas, and ganglioneuromas.



Fig. 1.—This child presents the typical Hutchinson syndrome. The exophthalmos and enlargement of the cervical lymph-nodes are especially marked on the left side.

Neuroblastomas.—In 1901, Pepper published a paper entitled "Congenital Sarcoma of the Liver," in which he said that "a careful review of the literature upon the subject of primary sarcoma of the suprarenal and of the same in the liver is intensely interesting, because I have found five cases of such striking similarity to the one that I have just reported that I have thought it important to abstract them quite fully to show that we have here a special type of congenital malignant disease with its own peculiar symptoms and pathological findings."



Fig. 2.—Hutchinson's syndrome in a boy aged three. Illness began with slight fever, pain in the extremities and prominence of the eyes. The child was thought to have rheumatic fever. The wound is the result of an operation on the frontal sinus. The child died two months after admission to the hospital, five months after the appearance of the first clinical symptoms.

In 1907, Hutchinson, after studying ten cases of so-called sarcoma of the suprarenal gland in

*Read by invitation at the sixty-fourth annual meeting of the Medical Society of Virginia in Lynchburg, October 24-26, 1934.

children, associated with metastases to the skull, described the following clinical syndrome.

"In the majority of cases the first thing noted was a swelling about the bones of the skull, which, in several of them, was ascribed to a fall or injury. Following or preceding this, proptosis of one or both eyes was observed. In two-thirds of the cases discoloration of the eyelids on one or both sides is reported, and in a few instances this was the first point to attract attention. Anemia is a striking feature in all the cases, the blood changes being those of a profound secondary anemia. Leukocytosis has not been recorded in any case. An abdominal tumor in one or the other loin was felt in only five cases. The progress of the disease in every instance has been rapid, and the younger the patient the more rapid it is. Indications of increased intra-cranial pressure, such as torpor, intense optic neuritis, and blindness may develop. The post-mortem features are also very constant; in all there was found a sarcoma of the suprarenal, usually consisting of small round cells situated on the left side in six and on the right side in four of these cases. The most extensive metastases were found in the bones of the vault and base of the skull, producing swellings on the head and protrusion of the eyes observed during life. Metastases are also met with in the ribs, sternum and vertebrae, but not apparently (except in Case I) in the long bones, though these may not always have been carefully examined."

In both of the types described metastases may form in the bones and liver before the primary growth is suspected or demonstrated. The differences in the two syndromes described have been explained in the following ways by Frew. In the Hutchinson syndrome the tumor was in the left adrenal and formed metastases by way of the blood stream, while in Pepper's syndrome the tumor developed in the right adrenal and metastasized to the liver by way of the lymphatics. Study of many cases has not confirmed the ideas formulated by Frew.



Fig. 3.—This child presented the Pepper syndrome. The tumor mass could be definitely outlined on palpation, but it could not be separated by palpation from the liver and spleen. The pyelogram showed that the kidney was displaced and rotated by the tumor mass. The patient died six days after an attempt at removal of the tumor.



Fig. 4.—X-ray of bones showing metastases in a girl, aged five years, who had a neuroblastoma of the suprarenal gland. The child was in the hospital three months and died two months after her discharge. During the stay in the hospital rapid extension of the bone changes was noted and retrobulbar metastases on both sides developed. Diffusely mottled areas of bone destruction and new bone may be seen.

The clinical course in these cases is usually rapid and progressively downward. In the cases which Geschickter and I have recently studied the average duration of symptoms before the patient was admitted to the hospital was six months. One-half

of the patients had had symptoms for one month or less. In two of the cases the tumor was present at birth. Death followed within a month when an operation was attempted. Within a relatively large number of cases occurring in children the clinical course is run within two months.

The clinical course, as said in the beginning, is protean in character. Frew has described a case in which the symptoms were those of acute rheumatic



Fig. 5.—X-ray of the spine in case of a neuroblastoma occurring in a white man aged forty-five years. The transverse process of the fourth lumbar vertebra has been eroded by a tumor which invades the body of the vertebra.

fever. In two of the cases reported by Geschickter and myself the disease at the onset resembled acute rheumatic fever, the temperature being high and many joints involved. In some instances a marked anemia with a low platelet count has been noted.

In five cases a laparotomy has been performed. Fever, a mass, and rigidity and tenderness of the muscles over the mass have made the examining physician suspect appendicitis. In some instances the differential diagonsis is made with so much difficulty that an exploratory incision seems advisable.

The changes in the bones, when involved, are quite typical. Multiple small areas of rarefaction predominate in the picture. The humerus and femur are the long bones most frequently affected. In the bones affected many small discrete areas of bone destruction are found, and occasionally a longitudinal zone of rarefaction. A periosteal reaction in which a delicate layer of bone is laid down parallel to the shaft of long bones and sclerosis of the marrow cavity are more typical of leukemia and lymphosarcoma. Such changes are rare in neuroblastoma.



Fig. 6.—Malignant paraganglioma of the suprarenal gland occurring in a woman, aged thirty-four years, which metastasized to the retroperitoneal lymph-nodes. In the photograph the tumor is in the suprarenal gland and the upper pole of the kidney, the cortex of which is invaded. With the exception of this portion the growth is encapsulated.

These tumors which may be solid or cystic are composed of small cells with hyperchromatic nuclei and little cytoplasm. They are grouped together in a manner which suggests the clumping of staphlococci in culture medium. Rosettes were found in a little more than one-third of our cases. A number of different terms have been given these cells (lymphocytoid cells, neuroblasts, neurocytes, sympathicoblasts and sympathogonia). Among the small cells are larger round cells with vesicular nuclei and carrot-shaped or pear-shaped cells resembling young spongioblasts. These elements are more or less constant and have their origin in the undifferentiated parent cells from which the sympathetic nervous system develops. Of the forty neuroblastomas which have been studied by Geschickter and myself, thirty-three occurred in the medulla of the suprarenal gland, or in the sympathetic ganglions adjacent to it.

As has been stated, the prognosis is bad, for the clinical course is progressively downward, and is rapid.

Paragangliomas.—Paragangliomas are the most common tumors of the sympathetic nervous system and present many clinical variations. Tumors of the carotid body are most representative of this group of tumors. These tumors develop most fre-

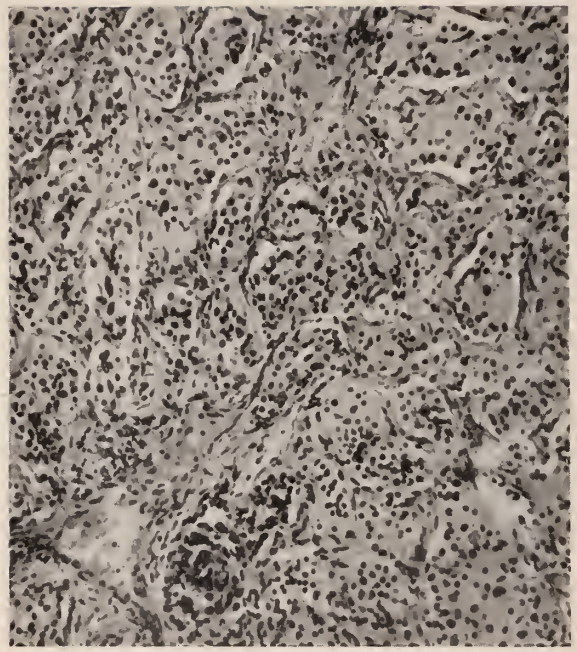


Fig. 7.—Photomicrograph of a tumor of the carotid body occurring in a man fifty-two years old. He had had a pulsating tumor on the left side of the neck for five years. The alveolar structure of the tumor is well demonstrated in the picture. The predominating cell, the character of the stroma, and the small groups of neuroblasts indicate the nature of the tumor.

quently in the carotid body, the medulla of the suprarenal gland, in the submucosa of the small intestine and stomach, and in the ganglions of the sympathetic nerves. They are usually solitary and benign, but may be multiple and malignant. The histologic picture may be so bizarre and variable that it may be difficult to distinguish some of the malignant paragangliomas from highly malignant carcinomas and sarcomas containing numerous giant cells.

The carotid body tumor has a rather characteristic appearance and location, occurring as it usually does at the bifurcation of the common carotid artery. These tumors usually grow slowly, are oval and have lateral, but not longitudinal mobility. One of the most interesting features of such tumors is that they may have an expansile pulsation—a thrill and bruit not unlike an aneurism of the carotid artery. These tumors are not confined to the carotid body, for tumors of like histology have been found in the parotid and thyroid glands.

Recently a colored patient came to the hospital. He gave the following history: He was 45 years old. About five years before admission to the hospital he noticed a small lump near the angle of the jaw. This had grown steadily from the size of a walnut to that of a man's fist. No pain or tenderness had been noted. When the patient was examined a large oval mass about 10 cm. in length was found. This extended from the angle of the jaw on the right side to the clavicle. The mass was lobulated and firm. The skin was not adherent and could be moved easily over the mass.

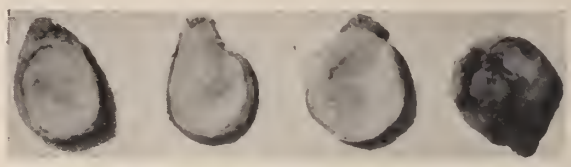


Fig. 8.—Cross section of a typical argentaffin tumor of the appendix (the so-called carcinoid). The lumen of the appendix is closed by the growth, but the wall of the appendix does not seem to be invaded (paraganglioma of the appendix).

A decided thrill could be felt on palpation and a loud bruit on auscultation. An expansile pulsation like that of an aneurism could be made out. This growth had been progressive for five years. There were, however, no changes in the skin, which I believe might reasonably have been expected, if the lesion under consideration had been an aneurism.

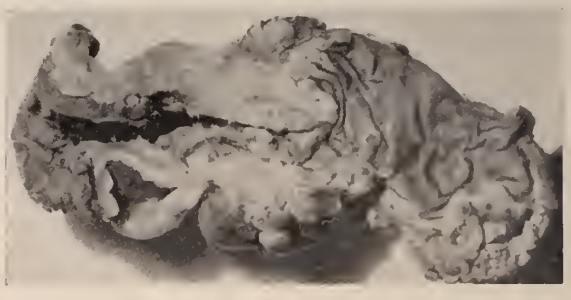


Fig. 9.—Cross section of a paraganglioma of the cecum and ascending colon. The lymph-nodes draining this section of the bowel were involved. Some along the superior mesenteric artery could not be removed. This patient has remained well almost three years, even though these glands were left behind.

Paragangliomas of the suprarenal glands form an interesting group of tumors because of the diverse and, at times, bizarre symptoms which may be associated with them. They usually occur in adults. Hypertension, hypotension, and vasomotor instability are not infrequently noted. One of the patients with a paraganglioma of the suprarenal presented Addison's syndrome—vasomotor instability and fainting attacks.

Urinary symptoms may be caused by these tumors, and deformity of the renal pelvis may be shown by the pyelogram. If the intestinal wall is secon-

darily involved intestinal symptoms may be noted. Glycosuria may result from hypersuprarenalism due to excessive secretion by the tumor. In some instances in which the suprarenal cortex has been destroyed by the tumor the symptoms of Addison's disease and melanoderma have been noted.

Paragangliomas of the adrenal rarely reach a large size. The larger tumors are more often cystic than the small ones and, when cystic, the contents are usually hemorrhagic. The smaller tumors are, as a rule, surrounded by a rim of compressed adrenal cortex.

Histologically an alveolar arrangement of the cells is found, but the cell grouping is more regular than that of tumors of the carotid body. In paragangliomas of the adrenal there is a tendency to syncytial formation. In the malignant forms, giant, atypical ganglion and large spindle cells may be found. Paragangliomas may present a variety of giant cells.

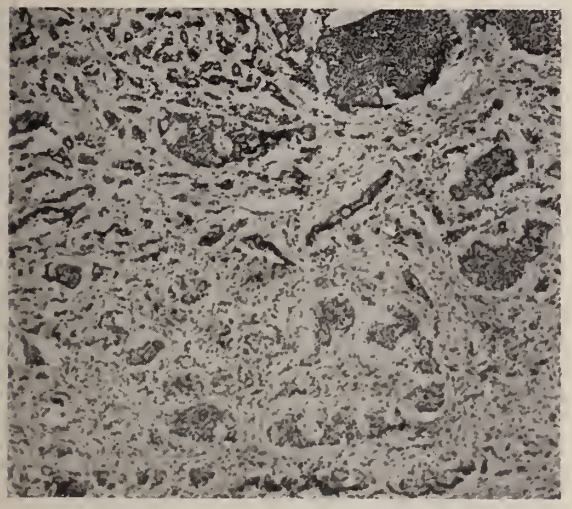


Fig. 10.—Histological preparation of specimen shown in Fig. 9. The patient, a white woman, aged forty-six years, had had abdominal symptoms of two weeks' duration. In the photomicrograph may be seen islands of cells which are typical of those composing paragangliomas. Among these islands and toward the lower portion of the picture small, deeply staining cells in a rosette arrangement may be seen. The cycle of cell growth is from small neuroblasts to the large masses of cells of a chromaffin type.

The paragangliomas of the intestinal tract form an interesting group. Over three hundred paragangliomas of the appendix have been reported. Over one hundred have been found in the small intestine, and cases have been reported in which these tumors have occurred in the stomach, large bowel, and rectum. Raiford recently reported twenty-nine cases from the Surgical Pathological Laboratory of the Johns Hopkins Hospital. The number recorded is now thirty-five. Twenty-two occurred in the appendix, ten in the small intestine, two in the large bowel, and one in the stomach.

They usually are found in adults. The symptoms of appendiceal paragangliomas (carcinoid) are suggestive of appendicitis. An operation is performed for appendicitis and a paraganglioma is found. Diarrhœa, with melena, is the symptom frequently associated with paraganglioma of the small intestine. About 20 per cent undergo malignant changes. Eight of the cases studied by Geschickter and myself were malignant. Those of the small intestine become malignant more frequently than do those of the appendix. When metastases occur, they are found in the lymph nodes of the mesentery, about the aorta and in the liver. If malignant changes occur obstruction may develop.

I will cite the following case to indicate the history and course of a paraganglioma of the cecum: The patient, a white woman, aged 46, was admitted to the Johns Hopkins Hospital on October 20, 1930. She complained of attacks of abdominal pain, distention and diarrhœa. For several years she had been subject to attacks of dyspepsia which were variable in duration, intensity and periodicity. The present attack differed from the preceding only in slightly greater severity. The only relevant detail in the past history was an attack of pulmonary tuberculosis twelve years before, from which she had apparently completely recovered.

The patient was a well nourished, white woman, in no acute discomfort. A small mass could be palpated in the right lower quadrant of the abdomen. This was about the size of a lemon, freely movable and not tender. Roentgenograms made following a barium sulphate meal showed a dilated terminal ileum, but no evidence of a constriction. Following a barium enema, however, roentgenograms revealed a large, constricting, filling defect in the cecum. A diagnosis of a tumor of the cecum was made, but the possibility of an inflammatory mass was considered. An exploratory laparotomy was advised.

Operation November 6, 1930.—A hard and freely movable mass could be felt in the cecum when the abdomen was opened. Some of the regional mesenteric lymph nodes were enlarged and hard, but it was thought possible to do a resection. The

terminal ileum, cecum and ascending colon were resected with some of the enlarged nodes. Some at the point where the superior mesenteric artery enters the mesentery could not be removed.

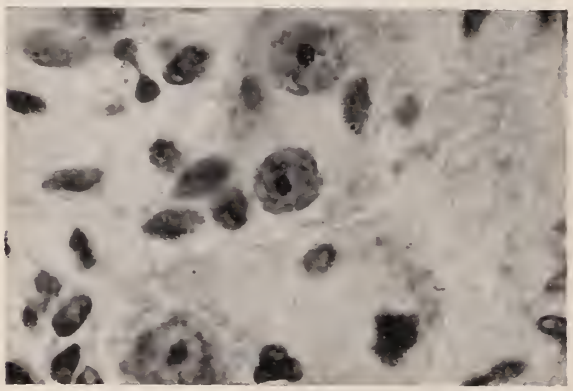


Fig. 11.—Section of a ganglioneuroma showing the large ganglion cells which histologically are characteristic of this growth.

The suture line perforated and a fecal fistula developed on the fifteenth day following operation. The fistula closed three months later, and the patient is now well, with no signs of recurrence.

The tumor was composed of densely packed cuboidal cells arranged in strands and compact groups. These were fairly uniform in size and possessed a moderate amount of granular cytoplasm. The granules stained dark brown or black with the silver impregnation technic, identifying the tumor as one of the argentaffine type. The stroma was quite dense and surrounded by nests of cells, leaving them as discrete islands of tumor tissue.

Ganglioneuroma.—The term "neuroma gangliocellulare" was first suggested by Virchow. The first tumor of this kind was described by Loretz in 1870. Tumors of this kind have been described in both the sympathetic and somatic nervous systems. Multiple ganglioneuromas have been observed in von Recklinghausen's disease. In a malignant ganglioneuroma, large ganglion cells and smaller embryonic neuroblasts, from which the ganglion cells probably developed, have been found.

The ganglioneuromas are, as a rule, benign and solitary, but they may occur as multiple tumors and be malignant. They may occur anywhere in the central nervous system or peripheral nerves, as well as in the sympathetic system. Three of the eight cases studied by Geschickter and myself were malignant—an unusually high number.

The clinical course is usually slow, marked by progressive enlargement and eventually by pressure symptoms. These tumors occur clinically as the giant tumors of the mediastinum and as the large tumors of the retroperitoneal space.

I shall give the history of a ganglioneuroma which developed upon a peripheral nerve. A Negress, aged 18 years, had had a painful, aching sensation in the calf of the right leg for three months. When the patient was recumbent the pain was relieved. Preceding this by two years was an ailment which the patient described as neuritis in both legs, and photophobia. The exact nature of this illness could not be determined. She attributed the pain in the right leg, complained of on admission, to a fall the year before. A definite lesion in the region of the right calf was discovered a month before.

On the posterior surface of the right thigh about 4 cm. above the popliteal space was a firm, tender mass which involved the soft tissues. It measured



Fig. 12.—Benign ganglioneuroma which arose apparently from the lower sympathetic cervical chain. Such tumors occurring in the chest or abdomen are usually retropleural or retroperitoneal in position. This case terminated fatally. These form the so-called giant tumors of the mediastinum.

20x20x8 cm. Its lateral and upper margins merged with and infiltrated surrounding structures. Below the popliteal space in the right calf a hard, cord-like swelling two inches in length, which was extremely tender, could be palpated.

The tumor was explored on October 6, 1926. It was vascular and contained mucoid tissue among vascular areas. On October 15th the mass was ex-

cised. The patient was admitted to another hospital in November, 1930, and an operation was performed for a recurrent tumor in the region of the right hip. The patient died on November 12th shortly after the second operation. Permission for an autopsy could not be obtained.

The gross specimen measured 12x10x4 cm. It seemed encapsulated. The surface was white. The cut surface seemed fibrous, but scattered throughout were hemorrhagic and yellow areas.

The histologic picture varied considerably. The greater portion of the tumor had a hyalinized, fibrous appearance, but there were many vascular areas. In the hyalinized areas were accumulations of small spindle cells, forming a reticulum, and large spindle cells such as are found in sarcomas arising from nerve sheaths. At the center of many such masses were cellular, fibrous areas, in which were embedded giant cells and an occasional ganglion cell. The tumor appeared to be a benign ganglioneuroma and a sarcoma of the nerve sheath.

The histories cited indicate how protean the clinical manifestations of tumors arising from the stem cell (sympathogonia) may be and how bizarre and variable the histological picture may be, depending upon the character and degree of cellular differentiation.

Johns Hopkins Hospital.

METASTATIC SEPTIC ENDOPHTHALMITIS.*

H. S. HEDGES, M. D.,
Charlottesville, Va.

J. B. M., 2 years of age, was first seen by Dr. Paine on the afternoon of March 13, 1934.

Ten days before this the child had chickenpox and a cold for four or five days. Awaked apparently well; at 9 A. M. wanted his mother to hold him, vomited breakfast, complained of pain in back of head and neck. At 10 A. M. temperature 101°.

At 4 P. M. temperature 107°; respiration 40; pulse 144; Babinski and Kernig positive; spinal tap clear; positive globulin; 21,800 W. B. C.

Intraspinous meningococcic serum treatment was begun at once and carried out carefully throughout the case.

On the 15th, spinal cell count was 50,000 and the fluid so thick that only 2 c.c. could be gotten by canula, and a suction syringe had to be used.

On the 16th, the child seemed generally better, but the right conjunctiva was becoming injected and lids were a little swollen.

Seen by us on the 19th. Marked congestion of bulbar and tarsal conjunctiva, pupil sluggish, marked ciliary injection. A greyish yellow mass seemed to fill the posterior portion of the vitreous. Atropin and heat were used but an absolutely bad prognosis given as to sight.

The child seemed to improve steadily until the 29th. The spinal fluid was almost normal, and temperature varying only from 99 to 100. Then the eye condition became worse: conjunctiva more chemotic, a little exudate began to appear in the anterior chamber and throughout the iris. The child was evidently suffering more severely.

Temperature on the 30th rose to 102.5°, and on the 31st to 104°, with increase in cell count in spinal fluid. The eye was now rapidly going into a panophthalmitis: the question was enucleation or exenteration. We would have operated sooner, but feared that the sudden rise in temperature and increased cell count meant a spread of the meningeal trouble; and frankly the little fellow seemed so low that we feared any operative work would be the end of it all. However, he was suffering so severely that on the morning of the 31st, with temperature 104°, we did a simple enucleation under chloroform. The globe was very tense and hard to deliver between the lids. A large pus pocket was found in the muscle cone back of the ball. Socket was washed with warm saline, cigarette drain inserted.

Convalescence uneventful.

Barring a slight drag in the right leg, the little fellow seems now well and bright.

104 East Market Street.

*Read before the Virginia Society of Otolaryngology and Ophthalmology at its annual meeting in Lynchburg, Va., May 5, 1934.

A SIMPLIFIED TREATMENT OF ECLAMPSIA.*

M. P. RUCKER, M. D.,
Richmond, Va.

So long as we are ignorant of the cause of eclampsia the treatment necessarily must be empirical. The best treatment of eclampsia is the preventive treatment, but the profession is so thoroughly in accord upon that subject, that I need not take up your time with it. However, concerning the curative treatment of eclampsia, there is considerable difference of opinion. If you review the fatal cases, you find that the immediate causes of death arranged chronologically are as follows: foreign body in the glottis during a convulsion; apoplexy; toxemia, the patient dying in coma or continued convulsions; edema of the lungs; anuria; sepsis, usually following some operative interference; and pneumonia. The British Commission for the investigation of eclampsia, headed by Eden, found a great deal of variation in the severity of the disease. They divided the cases in the London hospitals into two groups, the mild and the severe. The mortality in the severe cases was ten times greater than in the mild cases. The severe type, according to their classification, had two of the following symptoms: pulse over 120; temperature above 103; urine that boiled solid; systolic blood pressure above 200; absence of edema; coma and the number of fits greater than 10.

It is evident therefore that in any scheme of treatment, stopping the convulsions is of prime importance. It should include good nursing care by a personnel who knows the importance of avoiding noise, bright lights, jarring the bed, or otherwise disturbing the patient. The nurse should know how to give artificial respiration with the patient in a prone position and the head hanging over the edge of the bed, if foreign material gets into the air passages. To avoid such an accident a comatose patient should not lie on her back. Treatment, furthermore, should be directed towards the avoidance of edema of the lungs and anuria. Operative interference should be avoided whenever possible. Finally, it should be emphasized that no routine can be followed blindly. The patient must be treated and the treatment must be varied to suit the individual patient.

The introduction of the intravenous administration of magnesium sulphate by Lazard has tremendously simplified the treatment of eclampsia. With it the convulsions can be stopped promptly in the great majority of cases. It also relieves the coma, which simplifies the nursing care tremendously. My present plan of treatment dates from this time. It consists of just four things: 1. Stop the convulsions; 2. Give the patient a plenty of rest; 3. Promote kidney activity; 4. Digitalis. With this plan I have treated 123 consecutive cases of eclampsia with a gross mortality of less than 5 per cent, which is my justification for presenting this subject to you tonight. Stander makes no distinction between eclampsia and pre-eclampsia and he is probably correct. However, there is no sharp line of demarcation between the mild toxemia of late pregnancy and the cases of severe pre-eclampsia and for that reason I have included in this series only cases of toxemia with actual convulsions.

For the stopping of convulsions, my main reliance has been the intravenous administration of magnesium sulphate. I give 20 c.c. of a 10 per cent solution. If the convulsions recur I repeat it once or twice. I have not found it necessary to give more than four doses. In several cases recently when the magnesium sulphate failed I have used sodium amytal intravenously, with happy results. There is this to be said in favor of magnesium sulphate—it wakes the patient up, whereas the sodium amytal puts her to sleep. All intravenous medication should, of course, be given slowly. Under the head of stopping the convulsion comes also the avoidance of all external stimuli, such as noise, bright lights, jarring the bed, etc. Stroganoff goes so far as to give the patient a few whiffs of chloroform when a hypodermic is to be given. He also recommends the inhalation of oxygen for the cyanosis that follows the convulsions. In my scheme this has not been necessary for the simple reason that the convulsions are controlled promptly.

Under the head of rest comes good nursing care.

*Read at Forsyth County (N. C.) Medical Society, June 12, 1934.

One cannot emphasize rest too strongly. These patients are extremely ill, and one should disturb them as little as possible. For this reason I have abandoned colonic irrigation and gastric lavage. I see no more reason for pestering an eclamptic in such a manner than for treating a case of typhoid fever or pneumonia with such procedures. If the patient is in labor I give her morphine and hyoscine or sodium amytal and hyoscine so as to keep her as comfortable as possible in the first stage. For second stage anesthesia I prefer local infiltration of the perineum with 0.5 per cent novocaine. If the patient is not in labor I am content to let her be, until I have the toxemia well in hand, and the kidneys putting out a good quantity of urine.

To avoid suppression of urine, I give plenty of water. Nothing promotes kidney activity so well as water, and the best way to give water is by way of the stomach. If the patient is conscious she is encouraged to drink water and weak lemonade. Otherwise, a pint of water is poured into the stomach through a nasal tube every eight hours. Usually this is all that is necessary, but if it is not, hypertonic glucose solution can be given intravenously.

Edema of the lungs is combated with digitalis. I like to give half a cat unit dose of digitalis as early in the treatment as is possible. When this is done edema of the lungs does not develop. When the patient is brought in after a number of convulsions and she has already begun to froth at the mouth, it is wise to take five or six hundred c.c. of blood from a vein. One of my patients was brought into the hospital with a temperature of 105 and so cyanotic that it looked as if she was drowning from the pulmonary edema. I introduced oxygen into the peritoneal cavity through a trocar until it was tympanitic. The cyanosis promptly disappeared and she made an uneventful recovery. I cite this case to show that one must vary the treatment to suit the patient, and not follow a routine blindly.

After the convulsions are controlled, the treatment is tapered off with small doses of sodium amytal, grs. III, two or three times a day or with sodium bromide and chloral hydrate. For several days the diet should consist of fruit juices. If the patient has not gone into labor and she has apparently fully recovered and has a good urinary output, we have the troublesome question of whether to induce labor or allow the pregnancy to continue. On the whole, I think it is unwise to allow the patient to leave the hospital undelivered. However, there are exceptional cases that can be carried closer to term under careful supervision.

Approximately 25 per cent of the 123 cases were severe as graded by the Eden classification. There were six maternal deaths. The first of these was a white multipara, 36 years of age, who was admitted to the Memorial Hospital, November 29, 1925. Her blood pressure was 240/140. The urine contained a quantity of albumin, with hyaline and granular casts. Treatment consisted of morphine, colonic irrigations and venesection. She delivered spontaneously a still-born male infant. The mother died in coma eleven hours after admission to the hospital.

The second death was that of a colored multipara, also 36 years old, who was admitted to St. Philip Hospital, June 11, 1926, in convulsions. There was pulmonary edema. Blood pressure was 230/130. Albumin was present in the urine. The patient had two convulsions after entering the hospital, delivered herself of a still-born male child, and died twenty-four hours afterwards. Treatment consisted of morphine, digitalone, and high colonic irrigations.

The third fatal case was a colored primipara, 33 years of age. She had no prenatal care. Blood pressure was above 200 mm. of Hg. Her urine contained casts. Treatment consisted of intravenous magnesium sulphate, digitalis and rest. The delivery was spontaneous, the labor lasting forty-four hours. The baby, a female, was still-born. The mother died of pneumonia on the fourteenth day post-partum.

The fourth death occurred in a colored primipara, 16 years of age. She had normal blood pressure and urine, and a rachitic pelvis. The convulsions were easily controlled. The patient went into labor several days later. After a trial labor of fifty-two hours, a Cesarean section was done. The mother died of peritonitis on the third day.

The fifth case was a white primipara, 21 years of age, who was admitted to the Johnston-Willis Hospital, June 30, 1928. She had suffered from nocturnal epilepsy for the past five years. Past history was otherwise negative. During her preg-

nancy she was looked after by a chiropractor. Her pregnancy was said to have been normal. She was admitted in convulsions and had two more convulsions while the needle was being boiled. Pulse was 130, blood pressure was 100/80. There was no edema. The skin was hot and dry. Respiration was obstructed by a thick yellow mucus which was running out of the mouth and nostrils. Treatment consisted of four intravenous injections of 20 c.c. of a 10 per cent magnesium sulphate solution, two intravenous doses of 20 c.c. of 50 per cent glucose solution, two and one-half grains of morphine hypodermically, 40 grains of chloral and 40 grains of sodium bromide per rectum and 4 c.c. of 50 per cent magesium sulphate intramuscularly. She was given four drams of tincture of digitalis per nasal tube, and a lumbar puncture was done which yielded a few drops of clear fluid. In spite of all treatment the convulsions continued, the cyanosis became more lasting, and artificial respiration had to be resorted to frequently. The patient died in a convulsion ten hours after admission to the hospital. She had passed no urine for eight hours before admission and no urine was obtained by catheter.

My last fatal case was a white primipara, 21 years of age, who was admitted to the Johnston-Willis Hospital, May 31, 1929. She had been under the care of a Negro doctor who advised the patient to come into the hospital. Before she did so she had eight convulsions, and on the way to the hospital she had two more convulsions. She had two convulsions while she was being put to bed. Blood pressure was 185/130. Pulse was 128. The face, feet and vulva were very edematous. She had been given one grain of morphine before admission. She was given 15 c.c. of a 10 per cent solution of magnesium sulphate intravenously, and an hour later 20 c.c. In the meantime she was given two drams of tincture of digitalis by nasal tube. The convulsions continued. Rectal examination showed full dilatation. She was given spinal anesthesia. The spinal fluid was cloudy and under a pressure of 240 mm. of water pressure. A version and extraction were done. The baby, a girl, was still-born. It weighed 7 pounds, 1½ ounces. The patient continued to have convulsions after delivery. Three hundred c.c. of blood were withdrawn and 300 c.c. of a 10 per cent glucose solution were given intravenously. The patient had two more convulsions and ceased to breathe two and a half hours after delivery and six hours and twenty-five minutes after admission to the hospital.

The first two of the fatal cases occurred early in the series and were not treated according to the simplified plan. Neither was given magnesium sulphate intravenously. Both were treated with colonic irrigations and only one received any digitalis. The second two were septic deaths, one from pneumonia that followed a long spontaneous delivery, and the other from peritonitis after a Cesarean section. In both, the toxemia had been relieved a number of days before death took place. The last two were fulminating cases that could not be relieved by intravenous magnesium sulphate and morphine. The first one might have yielded to the intravenous administration of sodium amytal. In view of the cloudy spinal fluid under pressure that was found when spinal anesthesia was given, it is doubtful if anything would have relieved her.

CONCLUSIONS

A simplified treatment of eclampsia is outlined in which emphasis is placed on (1) stopping the convulsions with intravenous magnesium sulphate or sodium amytal; (2) rest; (3) water, and possibly intravenous glucose solution to promote kidney activity, and (4) digitalis.

One hundred and twenty-three consecutive cases of eclampsia were treated more or less in accordance with these principles, with six maternal deaths, a mortality of 4.87 per cent.

Two of these deaths were in early cases in which the treatment was not carried out. Two were septic deaths in cases in which the convulsions were controlled. In two cases the treatment failed.

Medical Arts Building.

NARCOLEPSY: A CASE REPORT.

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and
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This patient, a girl 8 years of age, was first brought into the hospital on the fifteenth of June. She had been under medical care since 1932. The diagnosis was epilepsy. The present illness is as follows: The patient had been a normal healthy child up until the age of 6 years, at which time she began to have staggering spells. These occurred several times a day. Gradually the condition became worse and the attacks increased in frequency and in severity. The child would apparently lose consciousness and fall, at times causing herself bodily injury. A physician was consulted, he pronounced the case epilepsy, and advised the family that very little could be done about it. Several more doctors gave the same advice. The child continued to get worse and the spells occurred twenty to thirty times a day. There was always a distinct loss of consciousness. The patient could not be allowed to go to school. On one occasion she burned herself rather severely when she fell into an open fire during an attack. The attacks occurred whether the child was at rest or at play.

The family and systems history are essentially negative. So far as past history, the patient had had the usual childhood diseases with no sequelae.

The physical examination revealed an apparently normal child. There were no physical stigmata, nor were there any discernible foci of infection.

Laboratory examination revealed the following: Urinalysis, average. Hemoglobin 93 per cent. Red blood cells 3,888,000. White blood cells 10,400 (polys 64 per cent). The blood Wassermann was negative repeatedly. Blood sugar (fasting) 120 mg. per 100 c.c. Basal metabolic rate was —2 with perfect cooperation.

Hospital study showed the patient to have spells of unconsciousness from which she could not be aroused easily and which occurred frequently (2 to 3 per hour at times, and then again 3 to 4 during one-quarter of an hour). The child had these attacks at any time—either while resting in a prone condition, or while at play. She would apparently be all right, then would fall into a state of unconsciousness lasting from a few seconds to two or three minutes. On recovery she would continue her previous occupation as though nothing had happened. She did not complain of any impelling desire to sleep. There was no history or evidence of ocular or auditory disturbances, nor was there present any type of paresthesia. There was no evidence of spasm either localized or generalized. There was, however, a complete relaxation, and the patient fell in any direction with apparently no prodromal signs. There was no jerking, foaming at the mouth, nor any type of convulsive seizure. Sedatives had no effect on the attacks.

A tentative diagnosis of narcolepsy was made. The patient was placed on ephedrine sulphate, 3/8 gr. once daily for one week. The attacks decreased in number and in severity. The administration of the drug was stopped. The attacks increased in number and severity. Again treatment was instituted. This time ephedrine was given in 3/8 gr. doses twice daily, and a saturated solution of potassium iodide was also given—five drops three times daily. There was a distinct amelioration of the frequency and severity of the attacks. Since the use of this treatment the patient has not fallen, the attacks are very much lighter, and the patient can be left alone without any fear of bodily injury. Apparently the drug acts only to inhibit the severity of the condition but has no value as a curative agent.

From the above findings plus the action of ephedrine we have placed the condition in the narcoleptic phase of the cataleptic category.

DIATHERMY FOR THE PHYSICIAN IN GENERAL PRACTICE.

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Electricity! It is regrettable that this word in medical therapy suggests such magic that to mention it in this field still makes some medical men react with "the psychological side—it is wonderful," "it makes them think they're getting something," etc. But these same criticisms do not apply in any of the fields of mechanics or physics when the unknown force is used to turn motors or the resistance to its flow is used to produce heat for sterilizer, cautery or, more commonly, light.

Then, why should we speak of its effects in the field of medicine as magical and psychological if our understanding of its action in the body is as definite, in many ways, as its behavior in other fields. Many of the laws of electrical behavior are now very thoroughly understood and recognized as possessing the same immutability as other laws of nature.

Indeed, the American Medical Association is definitely on record as accepting various forms of the Physical Therapy which includes the accepted forms of electrical therapy, among which is diathermy—the subject of our present thoughts. Diathermy as used in medical therapy is in the truest sense one of the electrical therapies. It consists in the use of high frequency current, accurately produced and accurately measured, introduced into the body in attempting to cure or alleviate pathological conditions.

To the writer, in all types of therapy accurate diagnosis is *sine quo non*. But especially in physical therapy, at this time, when we are yet establishing the upper parts of its foundation, does he implore it. For without accurate diagnosis results cannot be understood nor the manner of their attainment analyzed, without it no one can determine what physical modality or, for that matter, what drug is applicable or would prove detrimental. And regardless of what our own opinions are, we still are blest with medical "doubting Thomases" sufficiently to make us extremely careful in attempting to use any physical therapy in such a mode as to gain results which will elevate it in the respectful dignity of professional acceptance.

A very appealing side to physical therapy is the lack of conflict between it and other therapeutic efforts.

It would probably be impossible to say what form of physical therapy was most popular, but certainly thermo-therapy as used in various forms of refrigerating or heating is very frequently used. Among the methods of using refrigeration the writer thinks of general application in various cooling baths and alcohol rubs—locally ice-bags, ice-packs, ethyl chloride, carbon dioxide snow, etc.

The application of heat generally and locally includes a larger number of methods and devices, but none penetrates into the tissues and produces heat as deeply as does high frequency electrical current, so properly termed diathermy (from the Greek words (*dia*) meaning through and (*therma*) heat). Heat applied in the form of hot pads, hot water bottles, infra-red radiations, hot baths, etc., penetrate only limitedly before the dilated capillaries and venules gather it up and carry it off in the circulation to the skin, lungs, kidneys, etc., where the body's heat-regulating devices dissipate it.

General effects of the application of heat to the body in bearable quantity consist in results which at times are very beneficial and pleasing. There is a blunting of the sensory nerves to pain—a relief utilized many, many times since it was learned by primeval man as he rolled his aching body against a sun baked rock and found its heat soothing and comforting.

Also effects occur in the circulation of both blood and lymph. The blood vessels become dilated and engorged, with healthy blood being sent to and through the part; this means increased oxygen, increased nourishment, increased ferments and antibodies, increased white cells (the oxygen and nourishment bring increased tissue repair; the antibodies, ferments and white cells are protective); increased caliber of the blood and lymph vessels means thinning of their walls, providing more permeability which enables easier ingress and egress to and from the tissue where ultimate utilization must occur. The dilatation of the lymph vessels provides increased drainage from the tissues.

Another very interesting protective result of heat,

which undoubtedly varies with different strains of bacteria according to their sensitiveness to heat, is a certain undetermined inhibition of growth and toxin formation caused by temperature change. This is one of the effects of the body's protective effort—fever.

In vitrio many times when a bacteriological incubator has "run up" to 102 to 105 degrees Fahrenheit, as occasionally happens in laboratory incubators, the bacteriologist has found bacterial growth has been inhibited and toxin formation lessened. We may not know that the same happens *in vivo,* but we may very reasonably theorize that it does. An interesting thought in this place is that the heat necessary for tissue destruction is frequently much above that required for this growth and toxin inhibition with bacteria.

Of course, concentration of heat in sufficient amounts destroys bacteria and tissue. This concentration of heat may be caused by concentration of high frequency current or diathermy. Under this, using a unipolar current, small areas of tissue may be charred or carbonized; using bipolar application with one large inactive or spreading electrode and one small active or concentrating electrode, under the active electrode, the tissues are coagulated. The unipolar application does not destroy tissue so deeply as the bipolar.

As stated, we know of no other method than the use of high frequency current, as diathermy, to generate heat and produce its beneficial effects deep in the body.

Then, to sum up, local concentration of diathermy produces destruction of tissue either by carbonizing or coagulating it; while applied in tolerated amounts over larger areas there is an increase in tissue temperature, an increase in metabolism—both anabolism and katabolism—an increased permeability of the vascular walls with cellular migration and phagocytosis where infection is present, and an increase of antibodies and ferments brought in by additional circulation.

Now, as to the uses of diathermy in pathological conditions, easily enough, the medical man, versed in the pathology of various conditions, may decide, from the effects described, whether or not these are applicable to the condition. The appended table shows some of the conditions for which it has been used in the writer's series, and he feels he can advance his reasons for using it in each condition.

The application of the modality to the part is sometimes almost as difficult as the proper application is important. From various textbooks and periodicals much help can be secured in the preparation of suitable and properly fitting electrodes. Many of these are very easily prepared from block tin. Some of the especially ingeniously designed electrodes for the treatments of special regions, such as the throat, nose, ears, shoulders, vagina and prostate, are almost indispensible and should be included in diathermy equipment. Probably one of the most important things to be borne in mind in applying any electrode is that it should *fit snugly* to the surface. Elastic bandages, a collection of variously shaped and weighted sandbags, and some form of clamps should be great help in holding the electrodes comfortably and securely to the surface. *The surface to which an electrode is applied should be clean.* Foreign materials under the electrode diminish the surface exposed and may cause sparking or burning.

An effort to gain the cooperation of the person treated is always made by telling them what sensations they should expect, and that pricking, tingling, smarting or burning should not occur. "If they do, something is wrong; tell me so I can correct it." In other words, the patient's cooperation and assistance are as desirable as their comfort is necessary. Stay close enough to attend immediately to any discomfort the treated may have and explain that they must not break contact by partially or completely removing the electrode from the surface while the current is flowing. In treatments administered to portions of the body which are not heat sensitive—such as the prostate or cervix—a dependable thermometer is a valuable adjunct. Sensitive areas may be protected by rubber—an always available supply of this is old inner tubing. These may be sterilized and cut in any desirable pattern and used to protect the lead wire as it joins the electrode, over scars or hair margins when these are part of the treated surface; its use satisfactorily cuts down discomfort and possibility of burning.

The contraindications to diathermy are the same as for heat. They are not numerous but rather definite:

Tuberculosis

Circumscribed pus

Hemorrhage

DIATHERMY TABLE

DIAGNOSIS	Number of Patients	Unimproved	Improved	Cured	Number Treatments
MEDICAL					
Adhesions (abdomen)	5	1	4		38
Amenorrhea (acute—in previously normal patients)	7		7		10
Arthritis (including traumatic and hypertropic)	26	5	21		203
Arthritis—gonorrheal	4	1	3		26
Bursitis (shoulder and elbow)	14	1	11	2	60
Cervical erosions	9	1	5	3	97
Cholecystitis (chronic)	4	2	2		14
Deafness	6	1	5		64
Dysmenorrhea	13	1	12		88
Endarteritis (chronic lead poisoning)	1		1		31
Endocervicitis (mixed infections and gonorrhea)	48	6	20	22	292
Flat foot pain	3		3		11
Fracture of bones (post pain)	4	1	3		13
Frost bite (pain and cyanosis)	1			1	1
Furuncle	1		1		7
Gonorrhea (chronic in both sexes)	10		9	1	85
Herpes zoster	1		1		10
Inflammation (chemical—following varicose vein injection)	3		1	2	5
Mastitis (chronic)	4			4	19
Myositis	1			1	2
Nerve trauma	2		2		8
Neuritis	99	7	74	18	358
Otitis media (subacute)	7	1	3	3	24
Phlebitis (post-swelling—edema and pain)	2		2		6
Pneumonia	23	3	18	2	84
Prostatitis (chronic)	5	1	4		22
Pulmonary abscess (open)	2		2		13
Pyelitis (acute)	1		1		2
Raynaud's disease	1	1			9
Salpingitis (chronic)	1		1		24
Scar tissue (after breast amputation)	3		1	2	10
Sciatica	20	1	14	5	84
Sinusitis	5	1	3	1	24
Sprains	34	1	31	2	128
Thrombosis (occurring in leg vessels)	3		3		31
Trauma (soft tissue)	10		7	3	56
Total	383	36	275	72	1,959
SURGICAL					
Skin cancer (nose)	1			1	1
Cervical polypi	3			3	3
Endocervicitis (unimproved by medical)	10		1	9	13
Moles (pigmented, face and chest)	14			14	14
"Portwine" mark (small, on nose)	1			1	1
Papilloma (hands and feet)	10			10	10
Tonsil remnants	1			1	1
Total	40		1	39	43
Grand total	423	36	276	111	2,002

Malignancy

(With caution it may be administrated to certain areas of—)

Poor circulation

Paralyzed sensory nerves.

In tuberculosis there would seem a tendency to break down the "walling off process" by the congestion, possibly causing a spreading of the infection. In circumscribed pus the tendency of the congestion would be to break down the abscess wall with spreading of the infection. Naturally, where hemorrhage is already taking place, an added congestion to the part might cause an increase in blood loss and be undesirable. Malignant growths are generally characterized by an increased vascularity, and more congestion, theoretically, would cause increased growth and probably an increased tendency to metastasis, with detrimental developments. In areas

of poor circulation, care should be used to give the heat-producing current in smaller tolerated quantity so as not to produce coagulation of the part. And wherever the patient's sensation to heat is absent, there is a much increased possibility of burns because of this insensitiveness.

As important as generalities are in any therapy, it would probably be unfair not to mention especially the pneumonia treatments which are the result of Dr. Harry E. Stewart's splendid thought and effort.

The writer cannot understand how any physician can watch a series of pneumonias treated by diathermy and not be enthusiastic. It is not unusual for babies to relax and sleep during treatments, and in most cases they seem to welcome it, probably because it relaxes them and relieves pain. Quite a few cases of pneumonia have had less medication and a disappearance of temperature in forty-eight to seventy-two hours under diathermy treatments. The cases are more comfortable with less drug administration and, at a time when neutropenias are occupying increased thought and study, with much evidence definitely pointing to the "benzine ring" drugs as causing this condition, any curative treatment which reduces their use should be favorably considered.

Diathermy has been regarded with "open mindedness" in the treatment of pneumonias for a very long period; in fact, we have been over conservative in our opinion about it. Dr. Stewart correctly expresses it in—"We have, in the use of diathermy in pneumonia, a measure of greatest value in the treatment regime of each case. It is time that we spread the knowledge of its value to our confreres, in no uncertain terms." (Recent Advances in the Diathermic Treatments of Pneumonia, by Harry Eaton Stewart, M. D.).

The author confesses that he finds trouble in making a table sufficiently in detail without making it too long and cumbersome. As, in a previous paper, the definitions of improved and cured are the same, and an attempt has been made to be very conservative in claims. "Improved" indicates betterment of pathology or relief from pain; it has also been used where diathermy was one of several things used in curing a patient. "Cured" indicates that the pathology was relieved when only diathermy was used.

THE PROBLEM OF HAIR GROWTH.*

THOMAS W. MURRELL, M. D.,
Richmond, Va.

The growth, or lack of growth, of human hair constitutes a problem because we know so little about it. Professional ignorance is ever the opportunity of the quack; on the other hand, the doctor is always most interested in pathology.

If baldness killed, or hypertrichosis crippled, one is fain to believe that more knowledge would have been added to the very deficient total. Be that as it may, the fact remains that a large industry has been built up by people who recognize the insistent call of the public for relief along this line.

Based on ignorance, and selling remedies at a ridiculous profit, this large industry is nothing more than a racket. Its stronghold is advertising that promises relief. The fact that relief does not come, and the industry continues, only shows how desperate for relief is the clientele that supports it.

We Anglo-Saxon people have always acted as though death was the worst thing,—maybe it is. We certainly don't know, but we do find that life can be very hard and burdensome. People, and especially young women with defacement, due to either excess or lack of hair, develop profound psychic states; so much so, that life for them is profoundly altered. It does not suffice to attempt to minimize the situation. They are in the mood to do anything, and because there is so little we can do and the quack promises so much, the prosperity of the charlatan is a natural result.

Let us summarize what we do know: We are born with three kinds of hair on our bodies—the long hair of the scalp, the short thick hair of eyebrows

*Read before the sixty-fourth annual meeting of the Medical Society of Virginia, at Lynchburg, October 24-26, 1933.

and eyelids, and that fine down which covers the body called the lanugo hair. This last is probably our link with the fur-bearing animals. The growth of this hair is dependent to a certain extent on general conditions, for we find the hair reacting with the rest of the body to toxemias and wasting infections. It is noted that the amount and length varies with individuals, and this is usually attributed to the type or personality: for instance, the lanugo hair is conspicuously absent with the negro.

Now puberty arrives and another kind of hair appears over the pubes, in the axillae, and in the male, on the face and upper lip. This has been called sex hair, or terminal hair and is different in character from the other three, being curly, coarse and rather short.

We know something about the origin of this hair. It comes only with the development and body absorption of the products of the gonads. If castration take place before puberty, this hair does not appear. It is a very virile hair and seems to be affected less than the rest by general conditions.

Now, if this hair is due to the internal secretion of a ductless gland, it is reasonable to assume that the other hair of the body is in control of other glands.

It is admitted that growth processes are under the control of their internal secretions. The giant is due to the over-stimulation of the pituitary, and the types of men we see from the great hairy ape of a man to the smooth-skinned, classical Greek Apollo is due to the variation of the gland influence in the forming of personality.

It would seem that the hair in different parts of the body is more or less under the mandate of certain glands. Yet, these glands act so much in concert that control is not specifically given to any one. For instance, the thyroid appears to control the vertex of the scalp and the outer half of the eyebrows. Hair loss in these locations is a common observation in hypothyroidism. On the other hand, recent work tends to show that the pituitary is mixed up in this, because pituitary administration over considerable time has resulted in a return of hair to these locations.

It can, therefore, be accepted that endocrine stimulation is the essential basis of hair growth. When we use the word "hereditary," we simply mean an indefinite endocrine status. For to breed to a type of human means to breed to a type of glandular sufficiency.

Naturally, growth will be interfered with by pathology, and clinical observation is that seborrhea and other injections devitalize the hair. Since the hair partakes of general states, it, in turn, will be affected by general infections of toxemia. But, with these removed, the problem of stimulation of growth becomes one of physiology, rather than pathology, and must be so considered.

Overgrowth, or hypertrichosis, is to women even a more pressing problem than hair loss. Women, with a beard appearing, are ready to do anything, suffer any torture, and follow any advice which promises relief. Here, also, have occurred the tragedies of quack treatments, the cases poisoned with thallium salve, and the irremediable telangiectasis following X-ray.

Most of these women are convinced that this growth of hair is due to some fault of their own. It is commonly believed that grease applied to the skill will cause a growth of hair, and, further, that pulling hair stimulates its growth. It is true that pulling or cutting hair changes the character of re-growth, as, for example, the bristle of the man who constantly shaves; but there is not the slightest reason to believe that the total number of hairs is modified by anything which is done to the individual hair.

Nor is there any reason to believe that any chemical or grease, cosmetic or otherwise, has the slightest influence in increasing hair growth. The fact is that women start tweezing, or shaving, when the tide of the hair starts, and since it increases, attribute the growth to what they do. What is the cause of this overgrowth?

This type of hair grows in the area occupied in the male by the terminal, or sex hair. It is hated because it looks masculine. Just how far is it masculine?

The differentiation of sex is a curious thing. We see all grades of people, and the truth of the statement is evident, "There is a buried female in every male, a buried male in every female." This buried member of the opposite sex is buried just to the extent these attributes we call masculine or feminine are in the ascendency. These are physical and mental, and so it is that a masculine physical

structure may appear—the beard in a person who physically is intensely feminine.

Without any figures to support it, the writer is of the opinion that superfluous hair in the female is nearly always associated with a menstrual deficiency, or a low metabolic rate, or both; but there is something more than this. The glands, theoretically, should more or less check the other if physiological balance is to be preserved, and it is suggested that possibly the mammary gland is an overlooked factor in this tangle.

Dentists have always warned of degenerative changes in the teeth during lactation. The writer personally knew a lady, the mother of eight children, who was around fifty, and had a wonderful head of hair. She stated that there was nearly a complete loss of scalp hair during the nursing of her children. This heavy loss and complete regrowth had occurred with each lactation—eight times.

It is absurd, of course, to say that lactation is more feminine than child-birth; but it is a natural sequence in physiology, and when natural sequences are interrupted, the normal is hardly to be expected.

The essential weakness in all this is the exceptions which immediately occur to us. We think at once of some Italian woman, who nurses her children and has a beard, and no suggestions are offered as to the work to be done to solve this problem. This is the task of the physiologist and the endocrinologist, and these are only observations of a clinician.

The problem of hypertrichosis is worthy of solving. Slow and painful electrolysis, hair by hair, and even this in selected cases, is the only method to be considered. Other methods are fraught with danger, or plain fakery.

The problem of stimulating hair growth seems the easier of the two. Here we are fighting some active pathology or a deficiency status. Since, as stated before, the hair enters into the effects of generalized intoxication, the falling of hair may well be considered full reason for clinical investigation.

The skin is one of the great organs of the body; the hair is one of the addenda of the skin, and its condition should be considered a part of physiology. We speak of a suit of hair and treat it sometimes like it was a suit of clothes.

The barber shop and the beauty parlor have their places in society. To look your best is a worthy ideal for man or woman, and this is no plea for physicians to become hair-dressers.

If one will linger for a few minutes around the cosmetic counter of any big department store and hear the patter of the saleswoman; see the women eagerly parting with money on the most absurd statements, the size of the problem grows.

Here is need for education. Here, unfortunately, we, who should teach, do not know. This brief and disjointed paper is to call attention to a problem that needs solution, since the unhappiness it causes makes it worthy of scientific medicine.

17 *East Grace Street.*

DISCUSSION

DR. W. S. FERGUSON, Lynchburg: I feel that this is a most interesting subject, and Dr. Murrell has covered the ground thoroughly. I do not know that I am capable of opening the discussion on such a wide subject, but I made a few notes which I hope will be of interest.

Many advertisers, as we know, have made extravagant claims in putting their wares before the public for the growing of hair and the removal of the same where it is most objectionable, especially to the female sex, but to very little avail except from a commercial standpoint, at the expense of the public.

As to the growth of hair being more or less determined by the endocrine system, it remains to be proven, especially as to baldness. Dr. Bengston, in an article in the *Lancet* about two years ago, wrote on the use of the effect of pituitary injections. In his preliminary report of sixteen cases, nine are stated to have been cases of alopecia areata of a duration varying from six months to twenty-three years. The definite etiology of alopecia areata remains to be determined, although some are caused by trauma or a severe shock to the nervous system. This form of re-growth of hair is more amenable to treatment than the other various forms of alopecia, before the endocrine system was ever brought to our notice. Bengston also pointed out that the baldness treated falls in to the category of glandular alopecias, and does not commit himself about the common type of senile or presenile hair loss, although he has recently begun treatment of such cases along the same lines, and reports a re-growth of lanugo hair with the use of injections of the pituitary gland.

Zola Coper, in a review of the relations of the endocrine glands to the growth and distribution of the hair, concludes: "The question of the growth and distribution of hair is as yet but little understood. However, since few really quantitative studies of even the normal variations in the growth and distribution of hair have been made, it is difficult to determine just how great is

the influence of the endocrine glands. With endocrine disturbances there are also striking differences in the growth and distribution of the hair between men and women."

Personally, I have had no experience with the use of the pituitary by injection for the re-growth of hair and have rather awaited the experiment by others, which, as far as I know, have not met with marked success by the use of the same. The last report that I have had on the subject was that the enthusiasm provoked by this means has not been warranted, and continued observations should be made until the merit or failure of this treatment is decided and we know more about the effects of the endocrine glands on the general system.

The alopecia areata with which we come more in contact than any others, and with which I have had most experience, is treated with other means than glandular products. One marked case which I have particularly in mind is that of a farmer who was underpinning a barn. While doing so, the barn fell in on him, burying his head in the dirt. The dirt was soft, and his head went in. He did not fracture any bones. A few days after he began to lose his hair in spots, which was, of course, very disturbing to him. In the course of time he had many bald areas over his scalp. Now, that leads me to believe that that condition came from the traumatic nervous shock. What relationship can we say the endocrine glands had to such a condition? That man, under the usual treatment, tonics, nerve sedatives, some use of the ultra-violet ray, regained his hair entirely, coming back, of course, as light hair, and finally being restored to its normal color and thickness. So I think we have to consider those cases before we put it altogether on the glands. At the same time, we seem to be on the right road, and I hope that the endocrine theory will ultimately prove so valuable that when we reach the senile alopecia classification, we shall not have any to treat.

DR. HOWARD R. MASTERS, Richmond: It has been said that normally each sex has about 20 per cent of the opposite sex in his make up. In our observation of endocrine cases we have found numerous signs of the opposite sex present. In the male there is frequently lack of normal distribution of body hair, and in the female often an overgrowth of hair. In women the pubic hair usually assumes the diamond shape and sometimes extends up the abdomen with some on the chest. There may be an excessive growth of hair on the arms and legs, especially the legs, and in a few instances there are chin whiskers and a small mustache. These signs are most often found in women with angular features and whose general configuration tends toward the masculine type. Over-secretion of the pituitary or adrenals, and under-secretion of the pineal are often responsible for this increase in hair growth and distribution. When the gonads are principally under-active or accompany pituitary under-secretion or thyroid over-secretion, the body hair is scant in its growth, but when the gonad secretion has been suppressed by over-activity of the adrenals there is increase of hair. It has been noted that excessive hair seldom occurs in blondes but is usually present in brunettes. In the majority of cases where there is an excess of hair in women menstrual difficulty will be found. I do not think that we as yet know the definite relationship of the endocrine glands to the growth of hair. There may be, however, some association between the glands and the vegetative nervous system. It has been known for years that nervous shock will cause the loss of hair. One might speculate that blood vessel spasm of some duration might play a part in the starvation of the hair root with subsequent loss of hair, just as in a similar manner a spasm of the cerebral vessel may cause transient paralysis. I recall a patient who had over-worked as an efficiency expert and was under considerable tension for a long period of time. He developed alopecia areata, which spread over his entire face and head. Rest and change in attitude relieved him of his nervous symptoms and, instead of worrying about his loss of hair, he capitalized on it.

Dr. Murrell's paper is exceedingly interesting and should stimulate further investigation as to the causes and new developments in treatment.

DR. ALEXANDER F. ROBERTSON, JR., Staunton: I had a patient who noticed a rather interesting thing. During the course of two pregnancies she lost the color of the hair that was growing on her upper lip and also noticed that the hair did not seem to grow at all at that time. On each occasion, at the termination of the pregnancy, the color of the hair returned, and it continued to bother her as before.

I should like to ask Dr. Murrell whether any of the hormones of pregnancy have been used in the treatment of that condition.

DR. MURRELL, closing the discussion: A member of this society has a sister who married a widower who had a child two years old. When he was nineteen years old, she saw him, out of the back door of her house, kicked down by a stallion and trampled before her eyes. In about three weeks she was in my office with complete loss of hair. That is mental pathology. Ring-worm is fungus pathology. I have ignored the question of pathology here. But, with the pathology out of the way, the question of the etiological growth of the hair is a question that a lot of people are taking up.

In your patients with falling hair, there may be a calcium deficiency. It may be many things. Do they go to you? They do not. They go to a beauty shop and have hot oil treatment or something else. It is a racket, based on the demand of a large part of your clientele for the treatment of a condition about which we know little. Personally, I can not go further, because I do not know what to do.

So many women magnify this growth of down that it is a real problem in mental states. I have had a great many come to me for relief that should be in

some sanatorium for mental care. It is not a thing that can be just tossed to one side. I therefore feel it is justifiable to bring it to your attention and would insist that the one point in the paper which I wish to bring out is that a condition of the hair in which it is falling out, from one cause or another, is quite as much a reason for a general physical survey as any other physical deterioration.

DIABETIC COMA WITHOUT KETONURIA—CASE REPORT.*

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Although the advent of insulin has markedly reduced the mortality in diabetic coma, there are still certain complications which arise that make the handling of some cases exceedingly difficult.

Coburn,[1] in a review of 122 cases of diabetic coma, reported the death of twenty-seven out of thirty patients treated without insulin prior to 1923, a mortality of 90 per cent, while there were only twenty-seven deaths in the remaining ninety-two cases treated with insulin, a mortality of 29 per cent. In the latter group, eleven of the deaths were more or less directly due to severe complications accompanying the coma, but sixteen of the deaths were due to uncomplicated diabetic coma under intensive insulin therapy.

There was one symptom complex which appeared in many of the more severe cases and which always aggravated the condition, namely, functional renal insufficiency especially with reference to the excretion of ketone bodies. In the pre-insulin group there were six such cases, all of whom died. Among those cases treated with insulin, fifteen developed functional renal insufficiency. Of these, five died without resumption of excretion of the acetone bodies; nine remained drowsy until excretion began; and one recovered without resumption of acetone excretion. Furthermore, it was noted in three patients with indwelling catheters that the disappearance of acetone from the urine preceded anuria.

Coburn concluded from the above observation (1) that ketosis frequently existed without ketonuria and that this condition frequently preceded anuria; (2) that the excretion of acetone bodies was more important to recovery than their oxidation; (3) that the development of anuria greatly jeopardized the recovery of a patient with severe ketosis; and (4) that intravenous fluids in large amounts were of far more value in causing the excretion of acetone bodies and in preventing and overcoming anuria than fluids administered by other routes.

*Read at a meeting of the Richmond Academy of Medicine, January 16, 1934.

CASE REPORT

E. L. S., schoolgirl, age 15 years, was admitted to St. Luke's Hospital at 11 P. M., September 2, 1933, in a comatose condition.

Her family history was entirely negative except that her father had suffered from pellagra several years ago and one cousin had diabetes. She had had the usual childhood diseases without complications but no other illnesses and had been a healthy active girl until the onset of her present illness.

The present illness dated from about nine months ago when the patient began to complain of feeling tired out and run down most of the time. She did not seem to have her usual "pep" and energy although there were no other symptoms. This continued until four months ago when she was taken to her family physician who found sugar in the urine and put her on a restricted carbohydrate diet without insulin and had her urine examined from time to time. Her appetite and digestion remained good and there were no urinary symptoms. About a week before her admission to the hospital she seemed more tired out than usual and could hardly keep up and going, but her appetite remained the same. There was no nausea, no vomiting and no urinary symptoms. The day before her admission she refused to take nourishment of any kind and complained of feeling nauseated. Later on during the day she had several severe vomiting spells. The next morning she became very drowsy and was hardly able to stay awake; also very hysterical at times, first crying and then laughing. In the afternoon she went into a deep sleep and could not be

aroused. The family physician was called and found her in coma. There was no history of cough, cold, or any infectious process. She had taken no nourishment of any kind during the day except small amounts of sweetened water. From 4:00 P. M. to 7:30 P. M., seventy-three units of insulin were given in divided doses, and, just before leaving home at 8:00 P. M., 20 c.c. of a 50 per cent solution of glucose were given intravenously. She was brought to the hospital because of her unsatisfactory condition.

On physical examination the patient was found to have a temperature of 104.2 and a pulse of 140. Her general appearance was that of a fairly well developed and nourished girl of fifteen years, markedly dehydrated, in profound coma, and the breath heavy with the sweetish odor of acetone.

The face was flushed. Respiration was thirty-two per minute, deep and jerky. There was no cyanosis or jaundice, but the mucous membranes appeared anemic. The eyeballs were soft, the pupils equally dilated and reacted normally to light. There was no exophthalmos, ptosis, nor strabismus. The throat was dry and reddened but the tonsils did not appear diseased and there was no cervical adenitis. Diabetic pyorrhea was not present. There were no physical signs of pulmonary pathology. The heart was normal save for tachycardia of 140 per minute and the blood pressure was 130/85. The abdomen was moderately distended but was normal save for this. There was no edema of the extremities. The deep reflexes were not elicited and there were no pyramidal tract signs.

On catheterization 600 c.c. of urine were obtained which was strongly positive for sugar but was negative for acetone and diacetic acid. The blood sugar was 330 mg. per 100 c.c. and the plasma CO_2 was twenty-two volumes per cent.

At 11:30 P. M., 1,000 c.c. of 5 per cent glucose in normal saline were given intravenously with twenty-five units of insulin subcutaneously. At 12:30 A. M., September 3rd, the patient aroused and took 120 c.c. of water. Following this, a small amount of orange juice was given which was vomited shortly afterwards. Gastric lavage was then done which returned with a large quantity of undigested food. The rest of the night the patient remained in a semi-comatose condition but could be aroused and given small amounts of fluid by mouth, although some was occasionally vomited. The next morning her temperature was normal and she appeared somewhat better, although she was still very drowsy.

During the first twenty-four hours she was given 2,500 c.c. of normal saline containing 125 grams of glucose, intravenously; 1,260 c.c. of fluids by mouth containing 108 grams of glucose (approximately 500 c.c. of which were vomited); and eighty-five units of insulin subcutaneously. Numerous specimens of urine were examined and all were found to contain sugar, but not one gave the faintest reaction for acetone or diacetic acid. The total output of urine for the first twenty-four hours was 990 c.c., but 600 c.c. of this was obtained by catheterization on admission, so caffeine sodio-benzoate, grains three every three hours, was begun.

On September 4th, she received by mouth and vein 3,525 c.c. of fluid containing 185 grams of glucose and 110 units of insulin. The urinary output in this twenty-four hour period was only 195 c.c. which showed a trace of sugar but was negative for acetone and diacetic acid. The blood sugar was 160 mg.; the plasma CO_2 was 20 vol. per cent; the non-protein nitrogen 55 mg. per 100 c.c.; and creatinin 2.3 mg. per 100 c.c. The blood count was as follows: leucocytes 6,800, polymorphonuclears 82 per cent, and lymphocytes 18 per cent. The patient was still drowsy and stuporous and with a temperature ranging from normal to 101°. There was no further vomiting.

On September 5th, she received by mouth and vein 3,425 c.c. of fluid containing 200 grams of glucose with eighty units of insulin. The urinary output was only 165 c.c. which showed a trace of sugar but was negative for acetone and diacetic acid. At 10:00 A. M. the blood sugar was 155 mg. per 100 c.c., the plasma CO_2 16 vol. per cent, and the non-protein nitrogen 55 mg. per 100 c.c. At 3:00 P. M. the blood sugar was 135 mg. per 100 c.c. and the plasma CO_2 was 16 vol. per cent. On this day no urine was voided nor obtained by catheterization from 8:00 A. M. to 12:00 midnight. At 8:00 P. M. the patient's condition was definitely worse. She was more drowsy and stuporous and the temperature was 102° by rectum. There were definite signs of consolidation in the right lung base. At 9:00 P. M. one-half c.c. of salyrgan was given

intravenously and the same dose repeated at 12:00 midnight.

On September 6th, at 4:00 A. M. and 9:00 A. M. large quantities of urine were voided involuntarily in bed. During the twenty-four hours she was given by mouth and vein 3,500 c.c. of fluid containing 190 grams of glucose. At 8:30 A. M., the patient showed definite signs of insulin shock and responded very quickly to the administration of glucose intravenously. The blood which was taken at this time showed a blood sugar of 40 mg. per 100 c.c. and the plasma CO_2 was 18 vol. per cent. At 3:00 P. M. the blood sugar was 120 mg. per 100 c.c., the non-protein nitrogen 60 mg. per 100 c.c., and the plasma CO_2 was 28 vol. per cent. Only ten units of insulin were given during the twenty-four hours. One c.c. of salyrgan was given intravenously at 10:00 A. M.

Total urine obtained by catheter was 240 c.c., but large quantities were voided rather frequently involuntarily. Examination of the urine showed a trace of sugar, no acetone nor diacetic acid, a rare hyaline cast, a few blood and pus cells, and a distinct trace of albumen. The patient's condition on this date seemed somewhat better.

On September 7th, she was given by mouth and vein 3,620 c.c. of fluid containing 181 grams of glucose with forty units of insulin. The blood sugar was reported as 470 mg. per 100 c.c., non-protein nitrogen 72 mg. per 100 c.c., plasma CO_2 32 vol. per cent, with a urinary output of 405 c.c. and again she voided involuntarily several times during the twenty-four hours. One-half c.c. of salyrgan was given intravenously. Patient's general condition continued to show slight improvement.

On September 8th, she received by mouth and vein 4,265 c.c. of fluid containing 267 grams of glucose with eighty-five units of insulin. Blood sugar was 430 mg. per 100 c.c., non-protein nitrogen 100 mg. per 100 c.c., and plasma CO_2 22 vol. per cent. Total urinary output was 375 c.c. with large quantities voided involuntarily. The leucocytes were reported as 10,000 with 70 per cent polynuclears, 27 per cent lymphocytes, and 3 per cent eosinophiles. The urine showed the presence of blood and pus, occasional granular and epithelial cast, strongly positive for sugar, but negative for acetone and diacetic acid.

On September 9th, she received by mouth and vein 4,650 c.c. of fluid containing 200 grams of glucose with eighty-five units of insulin. The urinary output was 1,960 c.c. The blood sugar was 75 mg. per 100 c.c., non-protein nitrogen 84 mg. per 100 c.c. and plasma CO_2 26 vol. per cent.

On September 10th, she received by vein and mouth 4,000 c.c. of fluid containing 160 grams of glucose with sixty units of insulin. The total urinary output was 3,120 c.c. The patient on this date showed definite improvement. The temperature was normal and there were no signs of drowsiness. The process in the right lung base had apparently cleared up.

From this date on, her temperature remained normal. She steadily improved and on September 11th she was put on a diet containing C250-P60, with only a minimal allowance of fat. This was divided into six feedings, and ten units of insulin were given before each feeding. The blood sugar was 200 mg. per 100 c.c., non-protein nitrogen 80 mg., creatinin 3.6 mg., and plasma CO_2 42 vol. per cent.

September 12th, the blood sugar was 350 mg. per 100 c.c., the non-protein nitrogen 64 mg. per 100 c.c., and the plasma CO_2 42 vol. per cent. The urinary output was 2,200 c.c., and was strongly positive for sugar but negative for acetone and diacetic acid.

September 13th, the blood sugar was 360 mg. per 100 c.c., the non-protein nitrogen 60 mg. per 100 c.c., and the plasma CO_2 50 vol. per cent. The urinary output was 2,650 c.c. showing a faint trace of sugar but negative for acetone and diacetic acid.

September 14th, the blood sugar was 300 mg. per 100 c.c., the non-protein nitrogen 52 mg. per 100 c. c., and the plasma CO_2 54 vol. per cent. The urinary output was 2,700 c.c., showing a trace of sugar but negative for acetone and diacetic acid. During the night, the patient had a severe insulin shock which responded to intravenous glucose.

September 15th, the blood sugar was 110 mg. per 100 c.c. The urinary output was 3,300 c.c. with a trace of sugar and negative for acetone and diacetic acid.

September 16th, the blood sugar was 350 mg. per 100 c.c., the non-protein nitrogen 40 mg. per 100 c.c. and the plasma CO_2 66 vol. per cent. The urinary output was 3,400 c.c. containing eight grams of sugar, otherwise negative.

On September 17th, the patient was propped up

in bed. Her diet was changed to C200-P60-F50, with ten units of insulin twice a day. The urinary output was 3,800 c.c. with eleven grams of sugar.

On September 18th, she voided 4,200 c.c. of urine containing sixteen grams of sugar.

On September 19th, the diet was changed to C100-P60-F100, with ten units of insulin after breakfast. The urinary output was 2,000 c.c. containing eight grams of sugar.

On September 20th, the blood sugar was 370 mg. per 100 c.c., the non-protein nitrogen 36 mg. per 100 c.c. The leucocyte count was 5,700, with 66 per cent polymorphonuclears, 34 per cent lymphocytes, and 38 per cent hemoglobin. The urinary output was 3,000 c.c. and contained nine grams of sugar.

September 21st, there were 3,400 c.c. of urine showing a trace of sugar; September 22nd, 1,450 c.c. of urine showing a trace of sugar; and September 23rd, 2,430 c.c. of urine showing a trace of sugar.

On September 24th, the patient was discharged on the above diet, namely, C100-P60-F100, with ten units of insulin after breakfast.

DISCUSSION

This case illustrates rather graphically certain phases of diabetic therapy which are not at all unusual, but which deserve repeated emphasis since the non-observance of certain fundamental precautionary measures so frequently leads to disaster, as was nearly the case with this patient.

Inadequately treated diabetes is most usually progressive, whereas, of adequately treated cases as reported by Joslin's' Clinic, 80 per cent show no progression, and many show an actual increase in carbohydrate tolerance. Since diabetes occurring in young persons is always severe, rough dietary restriction is never adequate treatment in such cases. The same urge which prompts the normal boy or girl to raid the pantry is almost irresistible in the diabetic. The appetite is a dominant influence in youth and any system of treatment which neglects a thorough and systematic training toward a life of rather rigid abstinence so that the patient will eventually become the master of his appetite is doomed to dismal failure, is punctuated by repeated calamities, and is usually climaxed sooner or later by the ultimate tragedy.

Another commonplace in the care of diabetics which can never receive too much emphasis is the grave danger to which intercurrent infections subject them. Bad colds, sore throats, grippe, and the like, which are usually of trivial significance in the healthy non-diabetic, must be considered as potentially serious matters, and adequate precautionary measures to prevent dangerous consequence must be taken. This is especially true with young diabetics in whom the carbohydrate metabolism is so easily upset with the consequent rapid supervention of acidosis and coma. It seems most probable that in the case under discussion she had been suffering with an influenzal type of infection for a week prior to her admission, from which developed a central pneumonia which at the time of the first examination gave no physical evidence of its presence save fever and a low leucocyte count (6,500), in sharp contrast to the leucocytosis frequently present in uncomplicated diabetic coma. If her family doctor had been called when she first began to feel bad, I think it very improbable that coma would ever have developed, and it is not going too far to say that the pneumonia might even have been avoided.

From the brief review of the literature given above, it is obvious that functional renal insufficiency as a complication of diabetic coma is not at all unusual and is of the very gravest prognostic import. That its incidence is due to some perversion of the normal physiology of the kidney rather than to structural change has been repeatedly demonstrated by normal findings at many autopsies in so far as the kidneys are concerned.

The clinical picture may vary. In some instances there is profound collapse with marked depression of the vaso-motor center, a slowly progressive fall in blood pressure which resists all efforts to restore it to normal, and, finally, circulatory collapse—a picture very similar to that seen in severe traumatic or surgical shock. In other cases the blood pressure may be fairly well maintained until the last hour or two of life, finally dropping precipitately to circulatory collapse and accompanied by marked hyperpyrexia. In the case here presented the blood pressure was maintained throughout at a normal level in the presence of prolonged functional renal insufficiency, so that this fall in blood pressure which sooner or later occurs cannot be thought of as the important cause of kidney failure, though its occurrence would certainly aggravate and possibly

CHART OF CASE

Date	Time of Test	Urine					Blood			Fluids			Glucose			Insulin (units)	Temperature (Degrees F.)	Remarks:
		By Catheter (c. c.)	Voided (c. c.)	Glucose	Acetone	Diacetic Acid	Sugar per 100 c. c.	Volumes % of Plasma CO_2	N-P. N. per 100 c. c.	By Vein (c. c.)	By Mouth (c. c.)	Total (c. c.)	By Vein (gm)	By Mouth (gm)	Total (gm)			
9/3	.....	990	....	4 plus	neg	neg	330	22	....	2500	1260	3760	125	108	233	85	98.5 AM 101 PM	Semicomatose. Temp. 104.2 (R) on admission. Vomited 500 c.c. of fluid. Blood pressure 135/85. Caffeine sodio benzoate, gr. 3, every three hours.
9/4	.....	195	....	2 plus	neg	neg	160	20	55	2000	1525	3525	100	85	185	110	normal to 101	Semicomatose. No vomiting. Leucocytes 6800; polys 82%; lymphs 18%; creatinin 2.3 mg.
9/5	10 AM 3 PM	165	....	1 plus	neg	neg	155 135	16	55	1000	2425	3425	65	135	200	80	normal to 102	At 8 PM worse; more drowsy and stuporous; signs of consolidation at rt. base. 8 AM to MN no urine excreted. 9 PM and MN, salyrgan, ½ c. c., intravenously. B. P. 130/80.
9/6	8 AM 3 PM	240	*	1 plus	neg	neg	40 120	18 28	 60	2050	1470	3520	125	65	190	10	normal to 101	Better. 8AM signs of insulin shock. Glucose, intravenously. 10 AM, salyrgan, 1 c. c., intravenously. Urine: tr. of albumen, rare hyaline cast, few blood and pus cells.
9/7	.....	405	*	1 plus	neg	neg	470	32	72	1620	2000	3620	100	81	181	40	normal to 101	Much less drowsy. Salygran, ½ c. c., intravenously. Blood pressure 125/75.
9/8	.....	375	*	4 plus	neg	neg	430	22	100	2000	2264	4264	100	167	267	85	normal to 101	Slight improvement. Urine: tr. of albumen; occ. granular and epithelial casts; few blood and pus cells. Leucocytes 10,000; polys 70%; lymphs 27%; eosinophils 3%.
9/9	.....	....	1960	1 plus	neg	neg	75	26	84	1000	3650	4650	65	135	200	85	normal	General condition about the same.
9/10	.....	....	3120	.....	.....	.....	200	.....	.....	1000	3000	4000	100	60	160	60	normal	General condition definitely improved. Patient much brighter. No signs of drowsiness. Process in rt. base apparently cleared up. Blood pressure 120/70.
9/11	.....	....	....	.....	.....	.....	200	42	80	....	....	....	....	....	....	60	normal	Diet: C250-P60-F (as little as possible); six feedings; 10 units of insulin before each feeding. Creatinin 3.6.
9/12	.....	....	2200	4 plus	neg	neg	350	42	64	....	....	....	....	....	....	60	normal	Patient continued to improve.
9/13	.....	....	2650	1 plus	neg	neg	360	50	60	....	....	....	....	....	....	60	normal	Patient continued to improve.
9/14	.....	....	2750	1 plus	neg	neg	300	54	52	....	....	....	....	....	....	60	normal	During night had severe insulin shock which responded to glucose intravenously.
9/15	.....	....	3300	1 plus	neg	neg	110	....	....	....	....	....	....	....	....	60	normal	Gradual improvement.
9/16	.....	....	3400	8†	neg	neg	350	66	40	....	....	....	....	....	....	60	normal	Gradual improvement.
9/17	.....	....	3800	11†	neg	neg	....	....	....	....	....	....	....	....	....	20	normal	Patient propped up in bed. Diet changed to C200-P60-F50 with 10 units of insulin twice a day.
9/18	.....	....	4200	16†	neg	neg	....	....	....	....	....	....	....	....	....	20	normal	Patient in chair.
9/19	.....	....	2000	8†	neg	neg	....	....	....	....	....	....	....	....	....	10	normal	Patient up and about. Diet changed to C100-P60-F100 with 10 units of insulin after breakfast.
9/20	.....	....	3000	9†	neg	neg	370	....	36	....	....	....	....	....	....	10	normal	Blood: leucocytes 5700; polys 66%; lymphs 34%; hemoglobin 38%.
9/21	.....	....	3400	trace	....	....	....	....	....	....	....	....	....	....	....	....	.....	Patient continued to improve.
9/22	.....	....	1450	trace	....	....	....	....	....	....	....	....	....	....	....	....	.....	Patient continued to improve.
9/23	.....	....	2430	trace	....	....	....	....	....	....	....	....	....	....	....	....	.....	Patient continued to improve.
9/24	.....	....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....	Patient discharged. Diet: C100-P60-F100 with 10 units of insulin after breakfast.

*Patient voided large quantities of urine involuntarily.
†Grams. Twenty-four hour specimen.

even terminate an already gravely doubtful situation.

Just as a matter of interest, the various theories as to the etiology of this most serious condition are herewith tabulated.

1. Disturbance in permeability of the kidney.
2. A transient functional nephritis.
3. Temporarily impaired renal function on a basis of dehydration causing a high threshold for ketones, nitrogenous and other acid products of metabolism.
4. An actual nephritis coincident with diabetes.
5. An actual lowering of base in the plasma, causing acute kidney shut-down.
6. Unknown acid bodies in the plasma exerting a specific toxic effect on the kidney.

No discussion of the various theories will be attempted save to call attention to the fact that in cases of marked dehydration from causes other than diabetic coma, such as high intestinal obstruction, fulminant entero-colitis from any cause, etc., kidney block with the blood findings of uremia is the rule rather than the exception, and that replacement of the lost fluid in such cases is the *sine qua non* of recovery. In practically all of the reported cases of functional renal insufficiency accompanying diabetic coma, dehydration has been present to a marked degree, and practically all observers agree that the best method of preventing as well as combating the condition is an abundance of fluid by the intravenous route. While these facts by no means prove that dehydration is the sole cause of functional renal insufficiency in diabetic coma, they at least seem to show that it is a most important and possibly a determining factor in its development in many of the cases.

Salyrgan: I feel that special attention should be called to the apparently excellent results obtained by the use of the mercurial diuretic, salyrgan, in this case. As will be seen from the chart, the urinary output, which was very scanty on admission, decreased steadily during the first three days in the hospital to complete anuria for the last sixteen hours of this period, in spite of the fact that during this time more than ten litres of fluid were given. Coincidently with this, the plasma CO_2 fell from 22 vol. per cent to 16 vol. per cent and the patient's condition became desperate in spite of the fact that about 600 grams of glucose and 275 units of insulin were administered. Toward the end of her third day, one c.c. of salyrgan was administered intravenously, and this dose repeated on the fourth day. On this day the measured urinary output was 240 c.c. but a much larger amount was voided involuntarily and her bed had to be changed repeatedly. One-half c.c. of salyrgan was given on the fifth day, the involuntary voiding continued, and the plasma CO_2 rose to 32 vol. per cent. From this point her course was one of steady improvement and uneventful convalescence.

Whether or not the salyrgan was the sole cause of the release of kidney block in this case I cannot say, though it would seem probable from the clinical course. If in the future I should encounter another such case I would certainly employ salyrgan earlier, at the first sign of failing renal function, rather than wait for the development of complete anuria. It is possible that in this way a few of our diabetic deaths may be avoided.

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AUTOBIOGRAPHY OF A DOCTOR'S SADDLEBAG.*

ROBERT HUNTER GARTHRIGHT, M. D.,
Vinton, Va.

I was fashioned in a factory at St. Louis, Mo., during the year eighteen hundred and seventy, not of leather manufactured from the delicate skin of a lamb, calf or kid, but, I opine, from the hide of a stout and pugnacious steer that grazed on the western plains. It is recorded that I was placed in a room with other Saddlebags, and there remained undisturbed for fifteen long years, and then was transferred from my place of seclusion to the establishment of Owen and Minor Drug Company, at Richmond, Va.

In September, 1885, after being securely nailed up in a box with a lot of medicines and surgical supplies, I was shipped to the residence of a young country doctor who took me to the town of Palmyra, Va., at which place my interest in life began in earnest. I enjoyed the rides over the rolling lands of the Piedmont region, and meeting every day interesting and pleasant people. In the homes of the sick I contributed of my store.

After a delightful sojourn of six months in Fluvanna, my doctor took me to live in the country down by the blue waters of the Atlantic Ocean. We had a most delightful trip on a steamboat down the James, and the horse we were to ride through many a day and night, went with us. The courteous Captain referred to places of special historic interest on the Peninsula, including Turkey Island, Curles Neck, Westover, Jamestown, Williamsburg, and Yorktown. He spoke of famous men and women of the Revolution, recited thrilling incidents about the big War Between the States—of the battles of Frazier's Farm, Malvern Hill, Seven Pines, and Big Bethel, and of the heroes who took active parts in those dreadful conflicts.

For several years I mingled with the people of Knott's Island, and Princess Anne; went on small boats about Back Bay and Currituck Sound, where wild geese, ducks and swans abound during the winter months. In that section there were many sufferers from malaria, and I was called upon for large supplies of quinine and other drugs used in the treatment of this most annoying disease.

I visited lodges and churches, picnics and family reunions, corn shuckings and apple butter boilings, where children laughed and young couples met and whispered beneath the shining moon.

I went into the bedrooms of very ill persons, and met the Saddlebags of other doctors who were in consultation with my doctor. Though I carried and dispensed bitter and bad-tasting medicines, I was kindly treated, and welcomed into the homes of the people.

We met with both pleasant and disagreeable experiences. We were lost on a dark and foggy night on the waters of Back Bay, and did not reach the shore until we heard the clarion notes of a big old rooster announcing the approach of morning. We were near a shipwreck on the coast when thirty-two German sailors and the Captain of the life saving station, and all except two young members of his crew were drowned in the raging icy waters of the ocean.

Much occurred to disappoint and distress us. When a mother, a father, or a little child that we had done our best to save, died, our hearts were torn with deepest grief.

In the spring of 1889 we moved from the seacoast to the Valley of Virginia, and here resumed our professional activities. We enjoyed this land of great rocks and boulders, of rippling streams and flashing waterfalls; of smiling valleys, of verdant hills and blue mountains rolling away like the billows of the sea. Here for more than twenty years we wrestled with typhoid fever, and went through epidemics of diphtheria and scarlet fever, and other serious maladies.

We were present at the birth of more than a thousand babies, many of whom have reached maturity, and are filling useful positions in life.

Our active life was one of ups and downs. We met good people and bad people, but saw more of goodness, charity and unselfishness than of moral delinquency among them.

We rode many horses. One of them was big and tall and awkward; he would stumble, fall and cripple himself on the smoothest roads, and when driven to a buggy, would fall down and break some

*Copy of article accompanying Dr. Garthright's Saddlebag when presented to the Museum of the Medical College of Virginia.

part of the vehicle. His knees were always bare of skin, and bloody. Oh!, he made us tired, but we did not keep him long. We bought Bessie when she was young and lively. She had saddle gaits, and we must have ridden her ten thousand miles, for she was in our service for fourteen years. She was clear-footed, racked rapidly up and down steep hillsides, over the roughest roads, through the darkest nights, and never stumbled or fell. She was a dream, and to ride her was a delight.

But the time came when the country doctors' fleet and fine saddle horses that paced and galloped over roads and along by-paths, through fields and forests, disappeared, and since the coming of motor cars the mission of the Saddlebags has nearly ceased. Years have already passed since we learned that our usefulness had diminished, and now very few of us remain. I have myself spent a whole decade in idleness, resting on a bookcase in my doctor's office.

Almost forty-eight years ago I left Richmond in a box. I was nicely polished, but unsophisticated, with scant knowledge of the ways of men.

Today I return to the State's Capital in another box.

The deep scars I wear resulted from lacerations and contusions received, I trust, in the performance of duty. And so I very cheerfully enter the family of superannuates.

The Saddlebag family is rapidly disappearing. It is tending toward oblivion. This should not happen. The history of its efficient service through the seventeenth, eighteenth and nineteenth centuries in America, should not be allowed to perish from the earth.

POSTSCRIPT*

The young doctor with whom I labored for so many years, and learned to love more and more as the years have flown, is still serving the people in the lower end of the Valley of Virginia with his old time devotion and self sacrifice.

This Friend of mine is growing old;
The silver threads that may be told
Among the tresses 'round his face
Are only adding to its grace;
The lines of care appearing now,
Are ornaments upon his brow
And love and service make to shine
The face of this old friend of mine.

Oh Time, thou healer of our wounds,
Be very careful in thy rounds
To draw no line upon his face
To sadden it, or mar its grace,
But touch it gently here and there
To beautify each line of care,
And make a golden light to shine
Upon this old, old friend of mine.

Written when the Doctor was away, by
The Doctor's Saddlebag.

*The postscript was written by Dr. G. M. Maxwell.

CEREBROSPINAL FEVER.*

LINWOOD FARLEY, M. D.,
Courtland, Va.

Before proceeding to the topic for discussion, it will, I believe, be in order to briefly review the anatomical structures involved.

The meninges are three in number—the dura mater, arachnoid and pia mater. The dura is the outer and toughest of the membranes adjacent to the skull and the interior of the spinal canal. Just beneath the dura is found the subdural space which is almost no space at all, only sufficient for capillary flow of fluid between it and the arachnoid membrane. The arachnoid is a fine membrane. It is connected to the pia by lose areola. This includes the subarachnoid space in which the cerebrospinal fluid is found. The pia is closely adherent to the brain and spinal cord.

There are the cavities within the brain, the ventricles, which are connected with the subarachnoid space by the medial foramen of Magendie and lateral foramina of Luschka. Through these foramina the cerebrospinal fluid within the ventricles communicates with the fluid of the subarachnoid space.

Definition: Cerebrospinal fever is an infection with the diplococcus intracellularis, which occurs sporadically and in epidemics. It is characterized by primary local involvement of the nasopharynx o

*Read before the Southside Virginia Medical Association, at Petersburg, March 13, 1934.

tonsils, secondary invasion of the blood stream, and metastatic inflammation of the meninges, and more rarely of other parts of the body.

History: During 1805 and 1806, Viesseux, of Geneva, and Daniellson and Mann, of Massachusetts, first described the disease. In 1811, North, of New York, published the first monograph. Jachmann, of Germany, and Flexner, of the United States, established serum therapy.

Etiology: The meningococcus was found to be the causative organism of epidemic cerebrospinal fever by Weichselbaum in 1887. It is a gram negative diplococcus which can be grown on artificial media only in the presence of animal protein. According to the English classification, there are four immunological types. Apparently the disease is spread only by "droplet" infection from the nose and throat.

Morbid Anatomy: During the disease there is intense congestion at first of the pia-arachnoid and choroid plexus, with localized infiltrations of round and polymorphonuclear cells and erythrocytes. There is also congestion and often punctate hemorrhages of the dura. Later on there is an exudate in the subarachnoid space composed of leucocytes, fibrin, meningococci and erythrocytes which may lie in greenish yellow masses about the base and sulci of the brain. In internal hydrocephalus (due to blockage of flow of the cerebrospinal fluid from the ventricles to the subarachnoid space), the ventricles are distended and the brain tissue tightly compressed against the skull.

Symptoms: During the carrier stage there may be no symptoms, though we may find nasopharyngeal irritation with moderate purulent discharge having the characteristic diplococci.

During the stage of sepsis the organisms are found in the blood stream, causing the patient to be dull, apathetic, giving indifferent answers in monosyllables, and prefering to lie on one side, knees drawn up, with his head bent forward. Silence and immobility is striven for. There may be moderate cyanosis or ashen pallor. The temperature is usually about 101° F., and a slight chill may have been noted. The patient may complain of being sore all over, and polyarthritis may occur. The deep reflexes are exaggerated and there is hyperesthesia. The most marked feature is a rash, varying in size from pin-point to one-half inch in diameter, which does not disappear with pressure. In this stage the meningeal symptoms are usually absent, and spinal fluid normal.

The metastatic stage is usually ushered in with a bursting headache, vomiting, chills or chilly sensations and fever. Frequently it occurs in children with delirium and convulsions. There is retraction of the head, stiffness of the neck, positive Kernig's and Brudzinski's signs and slow pulse. The fever is irregular, even to intermittent or remittent in its course. There may be Cheyne-Stokes' respiration, insomnia, delirium, and coma may occur. The pupils, at first dilated, may become irregular.

The onset may be quite sudden with all the symptoms exaggerated. The patient may be struck down, dying in a few hours, while other cases may be so mild as to hardly suspect cerebrospinal involvement.

In some cases, especially infants, there may be a blocking of the outlet of the ventricles at almost any point from the foramen of Monro down and including the fourth ventricle, causing internal hydrocephalus. In these cases spinal puncture may obtain very little or no fluid. When this is found, death is to be expected speedily.

Diagnosis: Cerebrospinal fever is just one of the forms of meningitis; and then meningismus, as seen in acute fevers, may be confusing.

In cerebrospinal fever, the headache, stiffness of the neck, rigidity of the muscles, fever, delirium, and initial chill will be noted, together with Kernig's and Brudzinski's signs. Upon lumbar puncture the fluid is under quite a bit of pressure, usually turbid and sometimes bloody. Microscopic examination of the fluid shows increased number of polymorphonuclear leucocytes and extra and intracellular meningococci, with positive agglutination. Other forms of meningitis are apt to be purulent early. The microscope shows the specific organisms.

In meningismus the spinal fluid does not show an increase of leucocytes and is not turbid.

Prognosis: The mortality which was 75 per cent before the advent of serum therapy has since been reduced to 15 to 50 per cent, depending upon the time allowed to elapse after onset before its use. Of course the severity of onset, as delirium, convulsions, marked coma, and high fever are of grave omen.

Treatment: During the carrier stage the nasopharyngeal infection is treated with local applications.

In the septic stage intravenous antimeningococcic serum is used. The adult dose is 100 c.c. every twelve hours for average, or every six to eight hours for severe cases. Safeguard against anaphylactic reactions of nausea, vomiting, pallor, sweating, collapse, dyspnea or other alarming symptoms, by injecting the first 15 c.c. very slowly, then more rapidly if no reaction has occurred.

In the metastatic stage spinal puncture is done, drawing off the fluid until normal pressure is resumed. The antimeningococcic serum is injected by gravity—about 5 to 10 c.c. less than amount of fluid withdrawn. The average adult dose is 25 to 35 c.c. of serum. During this procedure respiratory embarrassment is to be watched for, stopping it if it occurs. These punctures and injections should be continued daily till the spinal fluid clears of its turbidity and other symptoms abate. The possibility of serum sickness must not be overlooked.

CASE REPORTS

Case 1.—S. B., male, white, age 18 years, complained of severe headache, with nausea and vomiting of sudden onset, while driving a car, about nine hours before seeing me. The headache had continued and there was some nausea. The temperature was 99.5° F., pupils widely dilated, pulse 52 to the minute. Morphia gr. ¼ was given but with very little relief, as six hours later another gr. ¼ had to be administered. When seen four hours later there was slight retraction of the head, and some stiffness of the neck. Spinal puncture drew bloody fluid under quite a bit of pressure. Six hours later 15 c.c. of antimeningococcic serum was injected. Twenty-four hours later 30 c.c. serum was injected. At this time the head was quite markedly retracted and there was marked stiffness of the neck and spine. Forty-eight hours later 30 c.c. serum was injected. Three days later the retraction of the head and stiffness of the neck and back were gone. The temperature fell to normal the second day and remained so. The patient came to my office twenty-one days after onset perfectly well except for dilated pupils. Three years afterwards he has had no after-effects.

Case 2.—E. B., white, male, age 3 years, retired perfectly well, but in about an hour had a chill, was nauseated and vomited. This child seemed quite ill. Temperature was 104.5° F. He called and cried for his mother although in her arms, and was quite irritable, crying out with the touch of my hand. There was a fine rash along the right costal margin. Six hours later he had a convulsion and seemed to be delirious, at which time the temperature was 105° F. The rash had become general over the chest and abdomen. The temperature ranged around 103° F. during his illness. Three days after onset, retraction of the head was noticed, as also rigidity of the back. Spinal puncture was performed, and quite turbid fluid was obtained under great pressure. About thirty hours later 15 c.c. serum was injected. This was repeated at twenty-four hour intervals for two more injections. The last spinal puncture was almost a dry tap and the child died twenty-four hours later.

Case 3.—L. B., white, male, age 9 years, brother of E. B., was taken sick the day his brother died with severe headache, chill, nausea and vomiting. Six hours later he complained of severe headache, some nausea and photophobia. The pupils were widely dilated, pulse 60 to the minute, temperature 99.5° F. There was some rigidity of the neck and back. Spinal puncture obtained bloody fluid under pressure. About ten hours later 15 c.c. of serum was injected intraspinally. This was repeated at twenty-four hour intervals—except on two days—until fourteen injections were given. Twenty-four hours after onset there was marked rigidity of his neck and back, as well as marked retraction of his head. These signs continued for fifteen days and at the end of twenty-five days were gone entirely. The headache, so noticeable at first, was almost completely gone after the third injection. The nausea ceased after the first injection. The temperature gradually rose until, on the third day of his illness, it was 102° F., where it remained for eight days. It gradually came down to 99° F., then returned to 102° F., after which it gradually receded to normal on the fourteenth day. With each spinal puncture he complained of headache and earache, which ceased with injection of the serum.

Thirty-one days after onset he was discharged with no after-effects except dilated pupils.

Reports for the Sixty-fifth Annual Session of the Medical Society of Virginia

INTRODUCTORY NOTE

Reports to have consideration at the Alexandria meeting of the Medical Society of Virginia are printed herewith so that delegates and alternates may acquaint themselves with them and be prepared to discuss and act on them promptly when they are called by the President in the House of Delegates. This is done to expedite the work and to give members more time for attending the scientific sessions.

The Council

Mid-Session Meeting

The Council of the Medical Society of Virginia held its winter meeting in the Society's office, 1200 East Clay Street, Richmond, on January 16, 1934, at 10:00 A. M.

Present: Dr. R. D. Bates, president; Dr. F. H. Smith, president-elect; Drs. P. St. L. Moncure, R. W. Miller, Wright Clarkson, E. H. Miller, J. T. McKinney, Percy Harris and J. E. Knight. The other councilors, Drs. Griffin Holland, C. B. Bowyer and J. M. Emmett were unable to attend. By invitation, the following were also present: Drs. H. H. Trout and J. K. Hall, vice-presidents; Dr. Warren F. Draper, State Health Commissioner, Dr. Wm. T. Graham, president of the State Board of Health, Dr. F. S. Johns, of the Legislative Committee, and Dr. J. Bolling Jones, chairman of the Special Committee to Investigate Irregular Practices at Certain State Hospitals and All Governmental Interference with Private Practice. Several other members of the Society, visiting in the city, sat in the meeting at various times—Drs. J. E. K. Flannagan, E. L. W. Ferry, T. B. Latane, M. H. Eames, H. C. Henry, J. C. King and J. M. Gouldin.

Announcement was made of the death of Dr. E. L. Kendig, on the previous day and, in recognition of his services as a former member of this body and also of various committees of the Society, motion was made and adopted that the secretary be instructed to send a telegram to Mrs. Kendig, expressing regret on his death.

Dr. Clarkson asked the privilege of presenting a young woman who wished to bring a legislative matter before this body. His request being granted, he presented Miss Sarah Hartman, a welfare worker, who asked the endorsement of the Society for a bill which had been presented in Congress, amending certain sections of the Criminal Code, that contraceptive supplies might be sent legally through the mail and by express, when prescribed by any physician, any medical college, by any druggist in filling prescriptions of licensed physicians, or by any hospital or clinic, each legally licensed or chartered in any State, Territory, or the District of Columbia.

Dr. Clarkson felt that this was a medical problem and a bill trying to get the matter in the hands of the doctors. Dr. Smith moved its adoption, which was seconded. After a free discussion, Dr. Moncure moved that this bill be tabled. This was seconded, following which Dr. Smith withdrew his resolution and Dr. Moncure's motion carried.

Dr. Clarkson, as chairman of the Legislative Committee, was asked for a report. He stated that he had asked Dr. Bolling Jones' committee to act with the Legislative Committee in the General Assembly for the passage of any bill pertaining to the work of that special committee.

He presented a request from the Roanoke Academy of Medicine, with regard to the treatment of people bitten by rabid dogs, asking that the laws be amended so that it would not be necessary for health officers to treat people bitten by rabid dogs, but that this treatment may be given by the family physician for a fee not in excess of $100. This was endorsed and Dr. Clarkson was instructed to try to secure the passage of this amendment.

Dr. Bates then announced that a committee from the Alexandria Medical Society had just arrived and would like to discuss plans with the Council for our next annual meeting. He wished to know if it was the pleasure of the members to consider the plans at this time or later. Dr. Moncure moved, and it was seconded and carried, that the Committee be allowed to present their plans at this time. The Alexandria physicians, Drs. Moore, Powell, Latane and Beattie, were presented to the members.

Dr. Moore, speaking for the committee, stated that they had selected the George Mason as hotel headquarters, and told of other details. The dates were then set for our sixty-fifth annual meeting as October 9th, 10th and 11th. The committee was thanked for attending the Council meeting and for their spirit of cooperation.

Dr. J. Bolling Jones was then asked to present the report of his committee which had been appointed to Investigate Irregular Practices at Certain State Hospitals, etc. He stated that his committee had sent out questionnaires to all members of the Society in Virginia, and the State hospitals and that they had received approximately 500 replies to this time. He presented recommendations from his committee.

Dr. Clarkson stated that the Committee on Legislation

and Public Health had endorsed this report and asked the power to employ an attorney at once to take care of the necessary legislation.

Dr. Smith asked the privilege, which was granted, of reading to the members a pamphlet entitled "The Privately Owned Mental Sanatoriums versus the State Owned Mental Sanatorium." It was explained that the authors of this pamphlet—Mr. Shirley Carter and Mr. W. I. Wheary—are two members of the board of the Western State Hospital. No one knew how the pamphlet was paid for and the third member of the board, Dr. King, did not know of its publication.

Dr. Smith said that it was felt necessary to make a reply to this pamphlet when it was brought to their attention, and read a statement which he requested the Council to adopt and to publish in the February issue of the MONTHLY.

Dr. Jones was then asked to read his recommendations again and Dr. Moncure moved their adoption. This was seconded. Discussion and suggestions followed, after which they were adopted as amended below:

1. That suitable legislation be drafted and presented at this session of the Legislature, embodying the following principles: No patient shall be admitted to a State hospital for the insane, nor to the State Colony for Epileptics and the Feebleminded, nor any unit, extension or addition of the said hospitals or colony, except as the patients are legally admitted because of mental disease, epilepsy, feeblemindedness, drug addictions, or inebriety.

No patient admitted to any of the above mentioned institutions shall be charged any fee, hospital charge, or any charge whatever, except such charges as may be made to the United States Government under contract for the care of veterans.

2. That provision be made for the State Commissioner of Health to be chairman of the General Hospital Board with executive authority.

3. That any present law in conflict with this proposed new legislation be repealed.

It was next stated that the Legislative Committee had only been allowed $25.00 in the Society's budget and that it would be necessary to make a special appropriation for its work.

Dr. McKinney moved that this committee be given $300.00 in addition to the $25.00 for an attorney and incidental expenses. This motion was seconded and adopted.

The secretary-treasurer said that the statement had been received for $2,250.00 from the publishers of the third volume of the History of Medicine in Virginia and wished to know how this should be financed. After discussion, Dr. R. W. Miller moved that the action of the Council at its last meeting, to borrow on our Government bonds be rescinded. This was seconded and carried and it was then adopted that the secretary be instructed to sell such part of the bond as necessary with the approval of the Budget Committee. Dr. Bates at this time re-appointed Drs. Clarkson and R. W. Miller as the Budget Committee.

Upon request of Dr. Greer Baughman, chairman, the Committee on Maternal Welfare was voted $10.00, or as much thereof as necessary, for the furtherance of its work.

The report presented by Dr. Smith (see February, 1934, issue of the MONTHLY, pages 687-693) was then unanimously adopted with the promise that Dr. J. Bolling Jones in consultation with Dr. F. H. Smith, revise same with the idea of making it more concise and that it be published in the next issue of the VIRGINIA MEDICAL MONTHLY.

Motion was made and adopted commending Dr. Smith's splendid work and the action of Dr. Jones' committee in putting this matter before the Council in such good form.

It was announced that the Richmond Academy of Medicine wished to have desk space in the State Society's office. After discussion, Dr. Clarkson moved that it be left with the executive-secretary and the president with power to act on this matter. The motion was adopted.

There being no further business, the Council adjourned.

AGNES V. EDWARDS, *Secretary.*

Report of Executive Secretary-Treasurer

TO THE PRESIDENT AND MEMBERS OF THE HOUSE OF DELEGATES:

There has been little change in the number of members during the past year, though there are a number in arrears with dues. This, we believe, is due to the fact that conditions have not improved materially for the medical profession in some sections.

Much active work has been done by committees and the educational program of the Society has met with much success. Gratifying reports in regard to this have been received from all sections of the State. Looking to a furtherance of our educational work, we wish to commend a recommendation from one of the ex-presidents, that the retiring president become automatically chairman of the Special Committee to Administer the Trust Fund of the Society for Postgraduate Clinical Education. This was suggested to the Committee on Revision of the Constitution and By-Laws and they have incorporated it in their amendments. With a definite chairman of this committee, we feel a beginning will be made in the solicitation of a trust fund.

As practically all of the counties in which there are several doctors are organized independently or in groups, we have our same report to make of fifty-one chartered societies, representing eighty-eight counties and one city. However, doctors generally seem to manifest a keener interest in the need of being banded together.

Our Society was represented at the Cleveland meeting of the American Medical Association by our delegates, Dr. Warren F. Draper, Dr. J. C. Flippin, and Dr. Hugh H. Trout.

Dr. R. D. Bates, President, appointed Dr. G. F. Simpson as a member of the Public Relations Committee, *vice* Dr. John A. Gibson, who could not serve, and Dr. James A. Grizzard was appointed a member of the Committee on Group Societies in place of Dr. E. L. Kendig, deceased. The President also appointed Dr. P. St. L. Moncure, Dr. J. Allison Hodges, and Dr. J. C. Flippin as a committee on Revision of the Constitu-

tion and By-Laws, as it was found necessary to have another printing of these.

There is not much to say in regard to our finances except that it is necessary to keep a tighter rein on expenditures this year. We have accomplished much splendid work in the past few years but it has nearly depleted our treasury. Since the budget, based upon expected receipts, was presented the Council at our Lynchburg meeting, the governing bodies of the Society have voted out $4,410.00 additional which naturally had to be taken from our reserve.

The books will be audited after the close of our financial year and a detailed statement will appear in the issue of the MONTHLY carrying the minutes of our sixty-fifth annual session.

Our report would not be complete without a word of thanks to the many members who have proved their interest in and loyalty to the Society upon every call.

AGNES V. EDWARDS,
Executive Secretary-Treasurer.

Report of Committee on Scientific Works and Clinics

MR. PRESIDENT AND MEMBERS OF THE HOUSE OF DELEGATES:

Notification of their appointment by Dr. R. D. Bates, President of the Society, was received by the members of the Committee, November 11, 1933. No formal meetings have been held though the work of the Committee has been carried on by correspondence.

Prospective exhibitors have been canvassed through letters and interviews by members of this Committee and by Dr. C. L. Fifer, local chairman-representative of this Committee in Alexandria. Several exhibits have been arranged though the final program of exhibits is not complete at this writing. Exhibitors continue to procrastinate in signifying their willingness to present material before the Society.

In this connection it is suggested that the Secretary of the Society circularize all members of the Society in regard to scientific exhibits at the same time that they are approached in regard to the presentation of papers. If a dead-line date were set it would greatly facilitate the work of the Committee and no doubt increase the number and excellence of the exhibits.

Tentative arrangements have been made for Clinics to be held in Alexandria, Tuesday afternoon, October 9th, and in Washington, Thursday afternoon, October 11th.

The financial report cannot be made at this time but it is safe to presume that the $50.00 allotted to the Committee will be entirely expended in preparing the exhibits. In past years the fund has been inadequate and it has been only through the generosity of local agencies that properties have been arranged for the exhibitors. It is again hoped that a more adequate allotment may be allowed the Committee for its work, at least a return to the $100.00 sum apportioned prior to the recent years of depression. As in past years all expenditures will be made through the Secretary of the Society.

The Committee acknowledges with thanks the generous help of the Secretary of the Society, Miss Edwards, who has been of invaluable assistance in coordinating the work of the Committee.

Respectfully submitted,

J. L. WRIGHT,
J. S. HORSLEY, JR.,
C. BRUCE MORTON, *Chairman.*

Report of Committee on Legislation and Public Health

TO THE HOUSE OF DELEGATES, MEDICAL SOCIETY OF VIRGINIA:

Due to political influences beyond our control, your committee on Legislation and Public Health was unable to accomplish everything requested by you, but we take pleasure in announcing the following achievements:

The Uniform Narcotic Law recommended by the American Medical Association was placed before the General Assembly and adopted with very few minor changes in its original draft.

We succeeded in obtaining the full support of the Congressmen and Senators from Virginia in our efforts to help the President of the United States in his program for the curtailment of compensation to veterans for non-service connected disabilities.

Following a conference with the Workmen's Compensation Committee of the Virginia Manufacturers Association, which committee was appointed for the purpose of making certain radical reductions in the schedule of fees prescribed by the workmen's compensation laws of Virginia, no request for a change in the present law was made by them to the General Assembly.

As requested, we safeguarded against the passage of any law which would make it necessary for an individual to obtain a physician's prescription in order to secure alcoholic liquors or be in any way limited or dictated to relative to the quantity or quality of alcoholic liquors that they may deem necessary in the treatment of patients.

Relative to a resolution originally passed by the Fauquier County Medical Society and later adopted by the House of Delegates requesting legislation providing for the payment of adequate fees to physicians who are compelled to appear in courts as witnesses, your committee wishes to state that after numerous consultations with the Attorney-General of the State of Virginia and with judges from practically every section of our State, we came to the conclusion that it would be useless to introduce a bill of this kind because of the fact that it would be branded as "class legislation" and would have no chance of being adopted.

We also feel that the present law is adequate and just, provided the physicians of our State are fully acquainted with the facts and protect themselves through cooperation with the judges and attorneys in their respective communities. The present law prohibits an attorney from asking a physician for any statement of his opinion (or professional judgment of a case) without first having him qualify as an expert witness and after

he so qualifies the physician is entitled to a reasonable fee for his services. For instance, a physician is rarely called upon to testify merely about the condition in which he finds a patient without being asked how long in his opinion the patient would ordinarily be disabled from such an injury or illness, or some other similar questions which involve his professional opinion or judgment of the condition and these questions necessitate his being qualified as an expert witness before such testimony is given. If physicians will remember that "opinionated testimony" in the sight of law is expert testimony and make proper appeals to the judges in their respective localities, there should be no cause for a change in our present laws relative to this matter. When a physician is served with a summons to appear in court as a witness he should immediately notify the one serving him with the summons of the fact that he will expect a certain fee to be paid for his services and then he should immediately communicate with the attorney who caused him to be called as a witness and find out from him whether or not he expects to ask him any opinion whatever relative to the patients condition and if such expert testimony is contemplated the physician should thereupon secure a written agreement from the attorney for the payment of a definite fee for his expert testimony and he may even demand payment in advance for any expert testimony that he may be called upon to give. The physician cannot refuse to appear before the court but he can appeal to the judge when he is asked questions relative to his "opinion or judgment" of any problem pertaining to the case. I would like to call the attention of those interested to an article in the *Journal of the American Medical Association*, published August 18, 1934, page 519, under the heading "Medicolegal," for this supreme court decision should further clarify this situation.

During the last session of the Legislature a bill was introduced providing for a tax upon physicians and we were successful in having this defeated by an overwhelming majority.

An increase of $7,000.00 in the appropriation to the Bureau of Mental Hygiene was requested, and also a bill was introduced by Senator Apperson carrying out the request of the Roanoke Academy of Medicine, relative to physicians receiving a fee for the treatment of their patients bitten by dogs suspected of having rabies, but these were defeated on the basis of a lack of revenue on the part of the State to meet these additional expenses. However, if the physicians throughout Virginia will contact their respective representatives about these matters prior to the next meeting of the General Assembly, it is possible these very important measures may be adopted, if funds are available.

Perhaps the hardest work of your committee came about through its opposition to Senate Bill No. 21 which provided for the operation of the DeJarnette Sanatorium as a pay institution. Before its final adoption, five amendments were placed on the original bill as follows:

The name of the sanatorium was made to include the word "State" so that it would be designated in the future as a State Institution;

Those in charge of the institution were directed to take into consideration a reasonable interest on the investment and a depreciation charge on the building in establishing the fees to be charged patients at the institution;

The Superintendent is forbidden to admit patients who are non-residents of the State of Virginia;

No patients are to be admitted to the sanatorium except such persons as are admitted for mental or nervous diseases or conditions arising from inebriety or the use of drugs;

Numerous paragraphs in the original draft were excluded which would have provided for an enlargement of the institution out of the surplus which would naturally have grown rapidly from profits derived from the operation of the sanatorium, provided this had been done on the basis of the provisions contained in the original bill.

Only 50 per cent of the members of the Senate voted for the bill when it came up for its final adoption and it would have had no chance of passing the General Assembly but for the fact that a large number of the most prominent and influential physicians in our State openly opposed the efforts on the part of the Medical Society of Virginia to close the DeJarnette Sanatorium and their influence in the opposite direction made it impossible for your committee to carry out your orders relative to this particular piece of legislation.

Your committee feels that our work relative to the State Hospital situation in Virginia has accomplished something because the conditions in our State Institutions for the Insane are admittedly deplorable, chiefly due to the lack of adequate appropriations, and we were the cause of a Standing Committee being appointed by the General Assemhly to make a careful study of the hospitals for the insane in our State with instructions to report back to the next meeting of the General Assembly, and we hope that some good may be accomplished by the work which will be done by these gentlemen before and during the next meeting of the General Assembly.

In closing, your committee wishes to express its deep appreciation to Doctor B. B. Bagby for his work in connection with the adoption of the Uniform Narcotic Law, to Doctor Frank Smith, our incoming President, to the Special Committee headed by Doctor J. Bolling Jones, and to many others too numerous to mention here, for their untiring efforts relative to our work in regard to the State Hospitals for the Insane, and also to the following members of the State Legislature who worked for, and voted with us, on every issue:

SENATE

APPERSON, H. B., Roanoke.
BURKS, CHARLES E., Lynchburg.
DICKINSON, BURT L., Marion.
FULLER, E. R., Richmond.
MONTAGUE, HILL, Richmond.
NORRIS, ROBERT O., Lively.
RUST, JOHN W., Fairfax.
SAUNDERS, W. CONWAY, Richmond.
SHUMATE, A. E., Pearisburg.
STAPLES, A. P., Roanoke.
THOMPSON, S. J., Pounding Mill.
TUCK, WILLIAM M., South Boston.
WATSON, H. HUNTER, Crewe.
WICKER, JOHN J., Richmond.
WRIGHT, W. A., Tappahannock.

HOUSE OF DELEGATES

ADAMS, W. H., Richmond.
BUXTON, SAMUEL R., Newport News.
CAMPBELL, T. ELLIOTT, Bowling Green.
DAVIS, ROY B., Paces.
DUVAL, JOHN T., Gloucester.
EACHO, HARRISON, Richmond.
GEORGE, T. J., Stuart.
GRABEEL, CHARLES A., Rose Hill.
HOLLEMAN, J. HOWARD, Surry.
JACKSON, M. H., Austinville.
KING, A. OWEN, South Boston.
LITTON, SCOTT, Clinchfield.
MOSS, CHARLES W., Richmond.
NEFF, W. N., Abingdon.
PERRY, W. H., Gate City.
RODGERS, SAMUEL D., Petersburg.
SANFORD, E. W., Farmville.
SCOTT, WALTER H., Roanoke.
SEGAR, A. E., Locklies.
SPIERS, JOHN, East Radford.
SUTHERLAND, H. M., Clintwood.
WALKER, J N., Bastian.
WILSON, THOMAS J., Clifton Forge.
WITTEN, J. W., North Tazewell.

P. ST. L. MONCURE,
FRANK S. JOHNS,
WRIGHT CLARKSON, *Chairman.*

Report of Publication and Program Committee

PUBLICATION

The VIRGINIA MEDICAL MONTHLY has been issued regularly at the beginning of each month. The adoption of a new format—a change in type and cover—seemed indicated. The MONTHLY has lived well within the appropriation allotted it in the budget. One hundred and thirty-eight original communications have been published during the year, thirty of them were contributed by doctors living outside the State of Virginia. The total number of advertising pages was twenty-four more than during the preceding year, an encouraging sign! It is hoped that the business manager will be able to add still further to the adverising matter during the coming year.

PROGRAM

The program as worked out by your committee this year involved several minor changes but on the whole follows the precedent set by years of experience. Short abstracts of each paper have been incorporated into the printed program, an innovation believed to be useful to all those attending the meeting, but particularly so to those proposing to discuss particular papers. The symposium this year deals with the timely subject of medical economics. Wednesday morning's program has been split into medical and surgical sections in order to shorten the program on Thursday and still get in the usual number of papers. The committee recommends that officers presiding at the various scientific sessions hold essayists and those who discuss papers strictly to the allotted time.

Respectfully submitted,
JOHN H. NEFF,
HARRY A. TABB,
WYNDHAM B. BLANTON, *Chairman.*

Report of Medical Economics Committee

TO MEMBERS OF THE HOUSE OF DELEGATES:

The Medical Economics Committee has no report to render this year.

JOHN O. BOYD, *Chairman.*

Report of Committee on Medical Education and Hospitals

TO THE HOUSE OF DELEGATES, MEDICAL SOCIETY OF VIRGINIA:

In its report of last year your committee drew attention to the steadily increasing number of young men entering upon the study of medicine. It now wishes to report that the economical depression has apparently had little effect in reducing the number. It also wishes to report that during the past year there has been much earnest discussion among educators looking to the elimination of portions of the college curriculum which now seem to overburden the undergraduate with detail. Likewise there appears to be a tendency to require a more rigid course of training for those preparing for the specialties, to encourage a greater proportion of students to prepare for general practice and to broaden the training of these latter. These are academic questions relative to which no recommendations need be made.

GRADUATE EDUCATION

It is of interest to note the steady spread of the movement of post-graduate education among the various states and throughout Canada. As specifically relates to Virginia the program of two and a half years intensive campaign of Obstetric instruction sponsored by your organization has now been completed and has afforded every practitioner in the State, who so desired, an opportunity to briefly review this important subject. Obviously an accurate appraisal as to what has been accomplished cannot be made, certainly not in terms of monetary value. Its results must be measured in the intangibles of lessened pains and morbidity of childbirth, healthier babies, and in such values as may accrue from the stimulus to the practitioners of the State to carry on further in their own scientific and clinical development.

Looking to a continuance of clinical education your committee believes it not amiss to call your attention to the fact that with the great number of alert young men now graduating in medicine with such advantages as have never before been available, the strong probability is that many of these who may have planned to enter the specialties will be crowded back into general practice, thereby placing those now in general practice at a disadvantage unless some well planned opportunity be still afforded for their continued advancement.

We believe it also proper to direct your attention to the fact that the movement of post-graduate instruction in the State is now at a crucial stage in that the average physician can ill afford any considerable financial outlay and the treasury of the society is much depleted.

The Department of Clinical Education is fortunate in having a committee of capable earnest workers who doubtless will make recommendations to your body as to carrying forward the work but pending the development of further plans your committee would recommend:

First: That the two, two-day clinical courses given yearly by both of our schools be made to touch upon the greatest possible variety of subjects and that greater effort be made to popularize these courses throughout the State by more frequent notices and comments in the JOURNAL and by such other means of intensive advertising as may seem best.

Second: Looking to a broadening influence of the

Clinics, and incidentally to that of the JOURNAL, that consideration be given to the advisability of requesting a coordination of the programs of our two schools and that it be arranged to publish in the issues of the JOURNAL next following each session of clinics a carefully prepared synopsis giving very briefly the gist of each clinic, thereby enlisting the continued interest and acting as a further stimulus to those who attend, as well as those who do not attend.

HOSPITALS

In its last report your committee called attention to the cooperative plan of financing hospitals then being undertaken. It now wishes to report that such plan still seems to be in favor and promises a fair degree of success. Closely allied to this movement we would also now call attention to certain cooperative plans among physicians such as are being undertaken in Atlanta and elsewhere, purporting to afford medical services at a nominal rate to such patients as are unable to pay full fees.

Relative to these plans which affect Hospitals and physicians alike, your committee does not make any specific recommendations but does desire to focus attention upon the spread of the tendency to the socialization of medicine and to stress the fact that through education and the exercise of well balanced judgment lies the hope that physicians may earn and still hold the position of leadership in directing all matters pertaining to health and medical practice.

J. W. PRESTON, *Chairman*
J. T. BUXTON,
M. B. HIDEN.

Report of the Membership Committee

TO MEMBERS OF THE HOUSE OF DELEGATES:

The work of this Committee is quite limited. We are glad, however, to report a marked reduction in the number of deaths of members over last year, the high peak in recent years. Names of those members who have died during the year will be read at Memorial Hour in our first General Session.

Our Committee wishes to propose that our President, Dr. Robley Dunglison Bates, be made an honorary member of this Society, in appreciation of his services for us during the past year.

ISAAC PEIRCE,
A. W. HAMMOND,
J. A. WHITE, *Chairman.*

Report of Committee on Ethics and Judiciary

TO THE HOUSE OF DELEGATES, MEDICAL SOCIETY OF VIRGINIA:

No matters have been referred to this Committee for attention during the past year.

ST. GEO. T. GRINNAN, *Chairman.*
J. C. FLIPPIN,
JOHN A. OWEN.

Report of Walter Reed Commission

The Walter Reed Memorial Commission, composed of Dr. Clarence Porter Jones, Dr. J. D. Clements and Dr. J. W. Hunter, wishes to report that the property has been put in excellent repair and that it is gratified to say that the Shrine is growing in popularity with visitors and tourists. The visitors' book shows the names of many celebrities and for this and other reasons the repairs were made.

The Gloucester Woman's Club has been the custodian and caretaker of the property for the past seven years (ever since the restoration), without any expense to the Medical Society of Virginia. One week each Spring the Woman's Club puts on a Tourist Visiting week to the many historic places in the county; this is attended by almost thousands of persons. This year the Club insisted that necessary repairs be made before the Walter Reed Home could be included in the group of places. We had no money, so Dr. J. D. Clements, the local member of the Commission, advanced $43.85* personally and gave his personal supervision. He has made a complete job and deserves our warmest thanks for the same. I respectfully urge that the Society reimburse Dr. Clements for this amount.

The Woman's Club has saved us a caretaker's wage for the past seven years, and I can assure you they have been faithful to their charge. We are hopeful that some way may be opened to obtain money for the rebuilding of the log kitchen and a fence around the property. It has dawned on quite a few persons that the little Reed Home is just about the biggest historic thing in the county of Gloucester, and maybe some one may remember it in his will. No one medically minded can visit this Shrine without carrying away some renewed inspiration. We wish every member of the Medical Society of Virginia would take the time to go and have a look.

CLARENCE PORTER JONES, *Chairman.*

*Receipted bills were attached to report.

Report of Committee on Maternal Welfare

TO THE HOUSE OF DELEGATES:

Allow me to submit the report of the Maternal Welfare Committee of the Medical Society of Virginia for the year 1933-1934.

The committee met at the call of the chairman February 18, 1934, at the home of the chairman in Richmond. Those present were Drs. C. J. Andrews, Norfolk; Hawes Campbell, Enfield; P. W. Miles, Danville; Tiffany J. Williams, University of Virginia; Greer Baughman, Robley Bates, President of the Medical Society of Virginia, and by invitation Dr. W. F. Draper, Health Commissioner; Dr. W. A. Plecker and Dr. B. B. Bagby of the Health Department, and Dr. M. E. Lapham.

A brief summary of the work of the committee in the past years was given by the chairman.

The members of the State Board of Health were called upon to present any problems that might be helped by discussion. Dr. Draper reported that the midwife problem was much less acute so that Mrs. Bennett, who had devoted her entire time to instructing the midwives was now spending most of her time in the counties where

there were no county nurses in an effort to explain to the pregnant women who intended to have their deliveries conducted by midwives just what to expect from the midwives.

Mrs. Bennett is continuing to grade the midwives according to the suggestions made by this committee some time ago.

Dr. Draper reported further that at the meeting of the board of directors of the Commonwealth Fund, held in New York City in December, the members expressed themselves as very much pleased with the work that Dr. Lapham was doing in the obstetrical conferences in Virginia.

It was suggested that an effort be made to have round table discussions on obstetrics with demonstrations in the various medical societies of the State to supplement the work of Dr. Lapham. The chairman was urged to set up such a discussion group in Richmond in order to try out the plan.

Respectfully,

C. J. ANDREWS,
P. W. MILES,
T. J. WILLIAMS,
HAWES CAMPBELL,
M. PIERCE RUCKER,
GREER BAUGHMAN, *Chairman.*

Report of Committee on Child Welfare

TO THE HOUSE OF DELEGATES:

For the Committee on Child Welfare, consisting of Dr. L. T. Royster, University; Dr. T. D. Jones, Richmond; Dr. Charles E. Conrad, Harrisonburg; Dr. F. D. Wilson, Norfolk, and Dr. W. P. Jackson, Roanoke, I wish to make the following report:

There was no formal meeting of our committee during the past year because no particular matter was referred to us for consideration, and there has been no contemplated change in the work sponsored by this committee. However, individually, different members have helped Dr. Bagby in the publication of his Bulletin, in making radio broadcasts in the interest of the Summer Round-Up, and in giving other suggestions from time to time.

We feel that the chief activity of interest to us, which is the Summer Round-Up, is steadily increasing in scope over the State. There has been a larger demand for pre-school material than ever before and, while it is too early to give definite figures, we feel sure that there will be many more children examined this year than last year. Therefore, we are gratified to be able to report a steady awakening of interest in and appreciation of the value of this work by the people of the State.

Respectfully submitted,

W. P. JACKSON, M. D., *Chairman.*

Report of Committee on Anesthetists and Laboratory Technicians

Dr. I. H. Goldman, chairman, stated that his committee had been inactive and had no report to make.

Report of the Department of Clinical Education

The Department of Clinical Education wishes to report that its work has been conducted during its fifth year in the same manner as in the past. Regular reports have been published each month in the VIRGINIA MEDICAL MONTHLY, and only a summary of those activities is attempted here.

The usual change in the composition of the committee occurred when the President-elect succeeded to the Chairmanship. Dr. I. C. Riggin was appointed to take the place of Dr. Draper. Drs. Ray Moore and H. S. Daniel continued as the appointees from the Medical Society, and Drs. Manfred Call and L. T. Royster as representatives of the Medical College of Virginia and the University of Virginia, all four of whom have taken an active part in the work of the Department since its beginning in 1929.

The appropriation for the Department, adopted in the Medical Society's budget, provided $150 for the routine expenses of the Department. The Department has interpreted this $150 as having been superseded by a special appropriation made by the Society of $500 to develop an experimental program of pediatric teaching, and $1,000 to continue the work of the Department's subsidiary, the Joint Committee on Prenatal and Postnatal Instruction, until the entire state was given the opportunity of having a class under Dr. Lapham. Of the $500, $10 has been expended for sending a clinician to the meeting of the Postgraduate Medical Society, and $35.45 for announcements of scientific meetings, a medical directory and the costs of postage, stationery and office supplies.

The Department cooperated in finding speakers for meetings of the Medical Society of Northern Virginia in Front Royal, in November; the Clinch Valley Society meeting, in April, and the Postgraduate Society, in October, and travelling expenses for the speaker to the last named meeting.

The regular postgraduate clinics held at the Medical College of Virginia and the University of Virginia are well received by the profession and are emphasized in notices and announcements of the Department. At the Medical College of Virginia the spring postgraduate clinic was held in connection with the Stuart McGuire lectures. Clinics and ward-rounds were held on April 3rd, and forty-four physicians were registered as in attendance. The twelfth postgraduate clinic of the University of Virginia Hospital was held in connection with the annual session of the Tri-State Medical Association from February 12-14, and the attendance and interest were encouraging. The spring clinic was on May 17th and 18th, at which Dr. Louis Hamman, of Baltimore, was the guest clinician. Though it cannot claim any of the credit, the Department would like, in reporting on postgraduate work, to mention the successful work done for colored physicians at the annual St. Philip clinic in Richmond. The fourth session, held from June 18th through 30th, attracted forty members. Of this number, twenty-eight were from Virginia, four-

teen were new this year, and eleven have attended all four clinics.

The main efforts of the Department have been directed to two things, the completion of the postgraduate courses in prenatal and postnatal care, and the attempt to provide the pediatric clinics as authorized by the Society. These undertakings are discussed in detail below.

The report of the Joint Committee on Prenatal and Postnatal Instruction, as submitted by its chairman, Dr. Lee E. Sutton, Jr., follows:

JOINT COMMITTEE ON PRENATAL AND POSTNATAL INSTRUCTION

At the time this report is drafted, the Joint Committee has practically completed its two and a half year program of intensive postgraduate instruction in obstetrics first authorized by the Medical Society at its meeting in Roanoke in 1931, and unanimously approved at the Richmond meeting in 1932, and the Lynchburg meeting in 1933. At the first two mentioned meetings an annual appropriation of $2,500 was voted to supplement the grants by the Commonwealth Fund, and at the Lynchburg meeting an appropriation of $1,000 was voted to finish the program.

The members of the Committee are: Drs. R. D. Bates, I. C. Harrison, R. A. Moore and H. S. Daniel, representing the Medical Society of Virginia; Dr. Lee E .Sutton, Jr., chairman, and Dr. Manfred Call, from the Medical College of Virginia; and Dr. J. C. Flippin and Dr. L. T. Royster, from the University of Virginia.

As was anticipated in the report of last year, the activities of the Joint Committee were maintained during the second year and a half without change except in minor details. Dr. Maxwell E. Lapham continued as Field Clinician engaged in the actual task of conducting courses in towns and cities of the state wherever groups of creditable size were formed.

Ten full circuits of ten weeks' duration have been completed. Two of these circuits comprised six groups instead of five, a departure from the original policy of including only five centers which occurred because of special conditions when the circuits were organized and because of Dr. Lapham's willingness to undertake the additional work. Besides the classes organized in circuits, three short courses, two weeks' long, have been held on the Eastern Shore, in Bedford and in Clifton Forge. Each of the courses held has consisted of ten meetings except those in Kingsport and Richlands which were three weeks and one week, respectively late in beginning. A total of 543 meetings have been held, each with an average of ten present. The enrolled members total 626. In addition, 310 visitors were present, chiefly physicians, but including internes, medical students and nurses not eligible to membership. The Field Clinician has reported the demonstration of 304 subjects in classes and the examination of 593 patients in educational consultations. This feature of the work has proved very valuable.

In every case the organization of a class has been undertaken only after it was approved by the local profession. This is in conformity with the instructions of the Medical Society at the beginning of this program, and fifty-four organized or especially formed medical groups in the state have now formally voted their endorsement of the courses.

The interest of Negro physicians in the opportunity for further training and the willingness of the Joint Committee to provide classes for them whenever it was feasible are worthy of note. Successful classes for colored physicians have been held in Norfolk, Richmond, Petersburg and Danville.

The fact that the number of members was greater in the first year may be accounted for when we remember that the earliest centers were located in and near the chief cities of the state and those of the second year and final period were carried to the more remote and sparsely populated sections. This, while the figures may not look so favorable, means that postgraduate work has been provided for physicians who might not find it convenient to attend the clinics conducted at the medical schools.

As one evidence of the approval of physicians of this work, it may be noted that when a group was organized in Richmond for the Mid-Tidewater Society, nine physicians who had been formerly enrolled in the Richmond class re-enrolled and provided the most stable and regular element of the group.

Interest in this program of prenatal and postnatal instruction has been manifested by medical organizations and health agencies in West Virginia, North Carolina, Tennessee, Indiana, Michigan, Massachusetts and Louisiana, and full information was furnished these applicants in response to their inquiries.

The unanimous appropriations of funds by the Medical Society three times, the approval of fifty-four organized or especially formed medical groups, the attendance rate of over 76 per cent on the part of members, and the written comment by 296 physicians that the course was well worth the cost in time and money as against six opinions to the contrary—all these seem to be indications of the effectiveness of the work.

In making recommendations for future work, the Joint Committee would like to point out that 285 physicians taking the obstetrical courses expressed a desire for work in other subjects. Of this number 134 preferred pediatrics.

Below are given in brief form statistics about the circuits and short courses conducted:

	Members No.	Members Pres.	Visitors No.	Visitors Pres.	Pct. Attend. Members	Consultations	Clinic Patients
First Circuit	79	587	19	29	74.3	67	31
Eastern Shore	14	104	5	18	74.3	9	3
Second Circuit	95	726	55	93	75.6	75	81
Third Circuit	52	406	15	24	78.0	61	30
Fourth Circuit	76	564	31	83	74.2	47	34
Bedford	9	68	--	--	75.6	10	5
Fifth Circuit	42	349	17	32	83.0	73	14
Sixth Circuit	63	453	46	124	71.9	104	18
Seventh Circuit	53	430	23	77	81.1	36	13
Clifton Forge	11	90	16	32	81.8	13	2
Eighth Circuit	60	447	23	76	74.5	56	60
Ninth Circuit	36	286	28	61	79.4	22	6
Tenth Circuit	36	252	32	35	70.0	20	7
Total	626	4762	310	684	76.0	593	304

Financial reports of the Joint Committee, to date, are submitted herewith:

MAY 1, 1932-APRIL 30, 1933

Expenditures

Travel and salary of Field Clinician	$ 7,000.08
Instructional aids	444.37
Office and staff assistants	2,299.99
Travel for organizing classes	542.02
Supplies and communication	803.58
	$11,090.04

Receipts

Commonwealth Fund	$ 7,500.00
Medical Society of Virginia	2,500.00
Enrollment fees	1,590.00
Refund from Maternity Center Association	40.06
	$11,630.06

MAY 1, 1933-APRIL 30, 1934

Expenditures

Travel and salary of Field Clinician	$ 7,000.08
Instructional aids	205.98
Office and staff assistants	2,333.28
Travel for organizing classes	162.18
Supplies and communication	304.00
	$10,005.52

Receipts

Commonwealth Fund	$ 7,500.00
Medical Society of Virginia	2,500.00
Enrollment fees	964.00
	$10,964.00

MAY 1, 1934-SEPTEMBER 21, 1934

Expenditures

Travel and salary of Field Clinician	$ 1,750.02
Instructional aids	17.32
Office assistance	57.00
Travel for organizing classes	26.76
Supplies and communication	54.80
	$ 1,905.80

Receipts

Medical Society of Virginia	$ 500.00
Enrollment fees	260.00
	$ 760.00

	Receipts	*Expenditures*
First year	$10,964.00	$11,090.04
Second year	11,630.06	10,005.52
Final period	760.00	1,905.80
	$23,354.06	$23,001.36

Leaving on hand a balance of $352.70, from which must be subtracted about $305 for expenses incurred, but not yet paid for. The $500 due from the Medical Society constitutes the balance from the program which has been turned back to the Department by the Commonwealth Fund for work in pediatrics.

The Joint Committee, at its meeting on September 17th, adopted a resolution expressing its thanks to Dr. M. E. Lapham for his part in the program which has been conducted throughout the state. It frankly admits that its efforts have been attended by a greater success than it believed possible, and gives the credit to the Field Clinician, who has proved to be exactly the type of physician and teacher needed for this service.

It also wishes to express its gratitude for the splendid and helpful service rendered by Mr. Geo. W. Eutsler in organizing and carrying out the details of this program as its Secretary.

And, last but not least, it would like to convey to the Commonwealth Fund its appreciation of the financial assistance and friendly cooperation which have made this work possible in Virginia.

The Joint Committee, in submitting this report to the Department of Clinical Education, asked for the discontinuance of this special agency because of the completion of the program, and its request has been granted by the Department.

The Department of Clinical Education, having received and approved the report of the Joint Committee, wishes to thank that body for its support and advice through this period.

The attempt to establish pediatric courses was prosecuted vigorously during the fall and winter months through correspondence between members of the Department. It was felt that if possible the funds available should be allocated to various sections of the state, and that such a fair disposition could not finance courses of any considerable length or substance unless they were taught at least partly by voluntary instruction, a form of cooperation which was offered to the Department of Clinical Education by the Virginia Pediatric Society in March, 1933. The funds were insufficient, however, and the pressure of the emergency affected the willingness of pediatricians to absent themselves for as long as three days from their offices to engage in teaching. One dif-

ferent approach to the solution was the presentation of a plan for a three-day circuit of courses, eight meetings in length, in each of the six districts of the state, eighteen courses and 144 meetings in all, which could be financed with the funds available—$500 from the Medical Society and $150 from the Extension Division—if $1,500 could be obtained elsewhere. The request for this $1,500 for teaching one year in pediatrics and succeeding years in other subjects was presented to the Commonwealth Fund by Dr. Draper, Mr. Eutsler and Mr. Zehmer in April. But, after examination, on the advice of members of the Commonwealth Fund staff, it was withdrawn as probably unacceptable to their Board. This was not because of any doubt as to the feasibility of the plan, but because of the inability of the Fund to participate in it.

As summer had arrived, it was determined that the best way to make a demonstration would be through concentration of resources and effort upon one intensive two-weeks' course in one of the smaller cities where urban instructional facilities were lacking. Because of the expressed belief of the physicians of Loudoun and Fauquier Counties at the time that pediatrics would be a more popular subject, they determined not to put on the course in prenatal and postnatal care, but the first opportunity for the pediatric work was offered to them.

The Department considers itself very fortunate in obtaining on short notice the services of such a well qualified instructor as Dr. George M. Lyon, of Huntington, West Virginia. Dr. Lyon is a member of the American Pediatric Society and the American Academy of Pediatrics, and has been engaged in private pediatric practice in both rural and urban territory for twelve years.

The Loudoun County Society, after approving the idea, took up the matter and advertised it so well that the membership and attendance at the two-weeks' course has been far beyond the expectations of the Department. Eighteen physicians were enrolled, five attended all the meetings, and there was an average attendance of fifteen at each class. Fifteen replies to the questionnaires sent out were received, and all said they considered the lectures excellent. Thirteen expressed a desire for future courses in other subjects. In addition eleven personal letters from members of the course were received expressing their gratitude for the opportunity which had been offered them and their approval of the course.

It is recommended that the Society be asked to appropriate the sum of $500.00 for the general activities of this committee for the coming year, and especially to continue the field work in pediatrics. The committee is much encouraged by the success of the course of instruction and clinics recently given in Loudoun and Fauquier Counties and it is contemplated that similar courses of instruction in pediatrics will be given at other points in the State. It is believed that this is feasible if the appropriation of $500.00 is granted which can be supplemented by the fees of physicians taking the courses and by financial aid available through the Extension Department of the University of Virginia.

The hope is expressed that the Committee to Administer the Trust Fund for Postgraduate Clinical Education will endeavor during the year to raise funds for the work for which this Committee was formed, this being especially necessary at this time in view of the unusual calls upon the funds of the Society for other purposes.

The Department of Clinical Education, at its meeting on September 17th, wished to go on record as expressing its grateful thanks to Mr. Geo. W. Eutsler for his untiring work and helpful suggestions in its program of postgraduate education, both in the work of the Joint Committee and the routine business of the Department of Clinical Education.

F. H. SMITH, *Chairman.*

Report of Committee on Group Societies

This report covers the six group societies, which hold component membership in the State Society, comprising thirty-nine counties and including the cities of Petersburg and Fredericksburg. They are as follows:

Mid-Tidewater	Southwestern Virginia
Fredericksburg	Post-Graduate
Northern Virginia	Northern Neck

The Committee visited each of these societies, in the order named, receiving a cordial reception and splendid cooperation.

Each Group Society promptly and unanimously agreed to form an organization in each county for the purpose of attending to business matters for that county, and informing the people of that county fully regarding all matters affecting the profession, and also to keep in touch with local, State and National legislators for the same purpose.

It was also agreed that the Woman's Auxiliary to the State Society be assisted in forming an auxiliary for each group, with a branch for each county.

Your Committee believes that this strengthening of the organization of the group societies will not only benefit the groups, which are already doing splendid educational, scientific work, but will result in organizing each doctor in each of the counties of the groups so that he may become an active agent in the work of protecting and furthering the interests of the medical profession.

At the request of the President, the Committee has also taken steps to look after those counties which contain such a small number of doctors that they are not represented in the State Society. Every effort is being made to form a separate society in about six of these counties, and persuade the doctors in the remaining counties each to join a nearby county society.

The profession is confronted with serious problems and dangers, and only through thorough and complete organizing of all of the doctors of the country can safety be assured.

Your Committee has been greatly aided by the advice and assistance of Dr. Clarkson, one of the Councilors, for which we are most grateful.

Your Committee would urge that this work be continued and that sufficient funds be appropriated for the necessary expenses.

Respectfully,

D. M. KIPPS,
J. M. HOLLOWAY,
J. A. GRIZZARD,
SOUTHGATE LEIGH, *Chairman.*

Report of Committee on Public Relations

The Committee on Public Relations of the Medical Society of Virginia met at the Society's office, 1200 East Clay Street, Richmond, June 20th, at 3:15 P. M. Those present were: Dr. I. C. Harrison, chairman, Dr. Alex. F. Robertson, Jr., Dr. G. F. Simpson, Dr. J. Shelton Horsley, Dr. Walter B. Martin, of the committee; Dr. R. D. Bates, President, and Miss Agnes Edwards, Secretary.

The object of this meeting, as stated by the chairman, was to discuss again the question of Federal compensation of doctors in various sections of the state for medical services to the unemployed. Mr. William A. Smith, Administrator of Federal Relief in Virginia, had with the assistance and advice of some fifteen representative physicians, members of the State Society, adopted a uniform schedule of fees. This schedule was submitted to our committee for approval and there was free expression of opinion by each one present. Reference was made to the resolutions adopted at the meeting at Lynchburg and some members of the committee were inclined to feel that these resolutions should be reaffirmed and nothing further be done. The chairman, however, called attention to the fact that the Lynchburg resolutions, while suggesting that no charge be made for services to the unemployed, really left the matter of accepting compensation from the Government to the decision and judgment of the various communities and local societies.

Dr. Simpson thought that the committee should take no action, but be governed by the resolutions adopted last fall.

Dr. Horsley approved the methods of the Relief Administration and expressed his willingness to co-operate. He felt that the matter might be left to the individual communities.

Dr. Martin felt that it was merely a matter of showing that we were willing to co-operate.

Dr. Bates thought that if we fail to co-operate through local agencies there would be a Federal enactment. Doctors might be allowed to refuse or accept.

Dr. Robertson said he was not criticising the committee, but felt the Government was offering the doctors a contract. He did not feel it was up to the Medical Society of Virginia to take specific action as to the fee schedule.

Dr. Martin then presented the following resolution:

Whereas, the FERA in Virginia proposes to extend certain types of medical service to the unemployed that properly come under that organization; and

Whereas, the administration desires advice as to the probable cost of this service; and

Whereas, the FERA on the advice of the special advisory committee of physicians has presented to this committee a schedule of fees for services proposed to be rendered those cases that come under the FERA,

Be it resolved by the Public Relations Committee that we consider this schedule a fair and reasonable scale of fees for the character of service proposed;

Be it further resolved, that this committee believes that the acceptance of this work by the physicians of the state is a matter of their individual choice and is not a question for action by this committee, and further that we recommend to all the local component societies and to the individual physicians in the state that they co-operate in every way possible with the FERA in providing adequate medical care for the unemployed.

These resolutions were seconded by Dr. Horsley and after discussion were adopted without opposition.

Before adjourning it was suggested that a question which might have the consideration of this committee was that of compensation insurance, as there is a tendency to make the individual use the company's physician rather than his personal physician, which fact destroys the normal relationship between physician and patient.

It was recommended that this committee suggest to the Legislative Committee that they work up some plan for the correction of this practice before the next session of the Legislature. I. C. HARRISON, *Chairman.*

Report of Committee on Military Affairs and National Defense

MR. PRESIDENT AND MEMBERS OF THE HOUSE OF DELEGATES:

Your Committee on Military Affairs and National Defense suggests the following resolutions for consideration and action by the Medical Society of Virginia in annual meeting assembled:

1. RESOLVED, That a roster be obtained and kept of the members of this Society who are officers in the Medical Corps of the Virginia National Guard, and in the Medical Corps Reserve of the U. S. Army and Navy.

2. RESOLVED, That a pamphlet be prepared for the members of this Society outlining the advantages of and the obligations to the National Guard and the Reserve Corps by qualifying for commissions and promotions in them, rather than wait until the next war begins.

3. RESOLVED, That the Deans of the two Medical Colleges in Virginia be requested to present a copy of this pamphlet to each graduate with his M. D. degree, and obtain his application for a commission in either the Medical Corps of the National Guard or the Medical Corps Reserve of the Army or Navy.

4. RESOLVED, That a resolution be sent from this Society to the President of the United States, the Secretary of War, the Secretary of the Navy, and each Senator and Representative in Congress from Virginia, urging adequate preparedness of the Army, Navy, and National Guard as the best preventive of war, and a well-trained and equipped Medical Corps of each to

prevent unnecessary suffering and loss of life from wounds and disease among the combat arms at the front and also the services of supply in the rear.

Respectfully submitted,

HARRY FITZHUGH WHITE *Chairman,*
NELSON MERCER,
JOHN W. ROBERTSON.

Report of Committee on Tuberculosis Clinics

Before reporting for the Committee on Tuberculosis Clinics, consisting of Dr. H. A. Latane, Dr. E. C. Cobb, Dr. C. L. Harrell, Dr. W. E. Brown and Dr. Dean B. Cole, I requested Dr. I. C. Riggin, State Health Commissioner, to furnish us with the summary of activities of the tuberculosis out-patient service during the past year. The following is taken from his report:

"The State Department of Health has endeavored to make available tuberculosis out-patient service in every county of the State but, due to the limited personnel, this has been found impossible of accomplishment. However, through the diagnostic and clinic service, chest clinics were held in eight cities and towns in which we are not subsidizing the work except through the Tuberculosis Out-Patient Service, and in 94 of the 100 counties. The very definite policy of having patients admitted to clinics only on an appointment basis and with a written request from the physicians has been rigidly adhered to, this having applied not only to chest clinics but to the X-ray clinics as well. Re-examination has been definitely discouraged except in those patients where the clinician or the physician has requested that re-examinations be made. The following table is a summary of the clinic service rendered in these counties and cities:

No. chest clinics		211
No. tuberculin X-ray clinics		49
(One without X-ray)		
Total No. examinations		8,256
No. original examinations	5,833	
No. re-examinations	2,423	
Total No. X-rayed		1,977
Adults X-rayed	847	
Children X-rayed	1,130	
Children tuberculin tested		2,099
Number positive reactors	1,023	
Total positive tuberculosis cases found		1,818
Positive tuberculosis cases found:		
Original examination	882	
Re-examination	936	
Total suspicious cases found		1,906
Susp. tuberculosis cases found:		
Original examinations	1,425	
Re-examination	481	
Total negative tuberculosis cases found		4,273
Total inconclusive found		259

510 patients were recommended for sanatoria."

Dr. Riggin further reports that intensive case finding surveys have been and are being made in twenty-eight counties and that in only six counties of Virginia is there no tuberculosis work directly under the Tuberculosis Out-Patient Service of the State Health Department.

On June 25, 1934, Dr. Warren F. Draper, State Health Commissioner, called a meeting of the Tuberculosis Advisory Committee, formed in August, 1932. At this meeting the question of pneumothorax treatment was considered, and the possibility and feasibility of extending such service throughout the State was discussed. Resolutions were adopted and it was suggested that the State Health Commissioner submit these resolutions to the Department of Clinical Education of the State Medical Society for consideration, study and recommendation.

DEAN B. COLE, *Chairman.*

Report of Committee on Mental Hygiene

The committee met in Richmond and after considerable discussion of the mental hygiene problem, recommend:

I. That more serious thought be given to the Mental Hygiene movement by the Medical Society of Virginia. Mental disease and its prevention is primarily a medical obligation and secondarily a social problem. The efforts of enthusiastic laity, unless under proper medical supervision, are often harmful. The interest of the medical profession, therefore, must be increased, and every effort made to further the knowledge in the profession of the present status of Mental Hygiene in the State of Virginia.

II. The Bureau of Mental Hygiene is organized primarily for the dissemination of this knowledge and for the prevention of mental disease. Due to lack of funds the Bureau is woefully handicapped. Therefore, the Medical Society of Virginia does continue to urge that this Bureau be adequately financed.

III. There are many needs for the proper handling of the mentally ill in the State but the following are paramount and should first receive attention:

1. The establishment of a separate institution for mentally disturbed children.
2. The establishment of an observation ward for mental cases at each of the State medical schools.
3. The establishment of training schools for the feeble-minded especially those under the age of ten. Special attention is called to the colored feeble-minded and to the fact that no child, either white or colored, is admitted to any of the State institutions under the age of ten.
4. New legislation to prevent the confinement in the jails of the mentally ill.

IV. We recommend, further, that a committee be appointed by the President to continue the study of Mental Hygiene in accordance

with a resolution passed by the Society in 1930.

Respectfully submitted,

GEORGE W. BROWN, M. D.,
DAVID C. WILSON, M. D.,
JAMES P. KING, M. D.,
FRANK H. REDWOOD, M. D., *Chairman.*

Report of Committee to Make Inquiry as to the Effect of Using Iodized Salt

TO THE HOUSE OF DELEGATES OF THE MEDICAL SOCIETY OF VIRGINIA:

Following a report of this Committee on the relation of iodine with special reference to iodized salt on the incidence of simple goitre, it was requested that an effort be made to determine what percentage of toxic goitres had been exposed to iodine prior to the onset of symptoms. A questionnaire covering this point was mailed to twenty-eight selected hospitals in the State requesting that this information be obtained for this study. Separate sheets were provided for individual cases.

In spite of persistent activity on the part of each member of the Committee, only forty replies were received, during the year. Out of this number five records showed a history of the use of iodized salt prior to the onset of symptoms. An analysis of these cases is as follows:

	AGE	TYPE	B. M.	USE OF IODIZED SALT	LOCATION
1.	38	Sym.	+30	2-3 Years	Norfolk
2.	25	Nod.	+16	2 Months	Charlottesville
3.	54	Nod.	+23	6 Years	Richmond
4.	26	Nod.	+75	3-4 Years	Norfolk
5.	41	Sym.	+41	1 Month	Norfolk

Obviously the total number of replies is too small from which to draw any conclusions. The Committee deeply regrets its inability to obtain a more general response for its final report but desires to thank those who contributed their records. The subject is a live one and should be given thoughtful consideration by all physicians engaged in the treatment of goitre.

NICHOLAS G. WILSON,
H. B. MULHOLLAND,
WM. H. HIGGINS, *Chairman.*

Report of Advisory Board to the Woman's Auxiliary

It is a pleasure to report that the work of the Woman's Auxiliary during the past year has been very successful and constructive under the leadership of Mrs. William Lett Harris, President. Several new auxiliaries have been organized in connection with county and district medical societies, and their published reports will show in detail their special practical work.

As suggested in our report each year, the Auxiliary has given much thought and time to aid in emphasizing the new and revised public school curriculum regarding health instruction, in which the pupils will have a more practical course and will be better fitted to meet the actually existing conditions in ordinary every-day life, such, for instance, as nutrition, infant care, home-nursing, etc., as well as personal hygiene.

During this year, the Auxiliary will also aid the profession in interpreting to the public the major advances of modern scientific medicine and will be of great value to organized medicine in helping to formulate correct opinions as to suggested innovations in the future, for, in these restless days of changing conditions, it becomes increasingly evident, as well as necessary, that the laity as well as the profession, shall understand and recognize the truth and the seriousness of the present professional situation, for if the essential basic ideals of our age-old profession are to be maintained, their united voice must become articulate and commanding.

Dr. Southgate Leigh, a member of this committee, in discussing this subject pertinently, writes as follows:

"At this critical time, as affecting the medical profession, it has become necessary to educate the public in many matters for the good and safety of the profession and the welfare of the public, and the women of the doctors' families have wide influence that can be used in this good work.

J. ALLISON HODGES, *Chairman.*
SOUTHGATE LEIGH,
LEE E. SUTTON.

The Committee to Administer the Trust Fund for Post-Graduate Clinical Education

Has never met, which is undoubtedly due to the fact that the members have felt that the times have been unpropitious for soliciting funds.

Report of Committee to Investigate Irregular Practices at Certain State Hospials

TO MEMBERS OF THE HOUSE OF DELEGATES:

As our Committee is to have another meeting before the annual session of the Society, we are not publishing a report at this time but will present it in full at Alexandria.

J. BOLLING JONES, *Chairman.*

Report of Committee on Revision of Constitution and By-Laws

TO MEMBERS OF THE HOUSE OF DELEGATES:

Your Committee on Revision of the Constitution and By-Laws submits the following report:

In accordance with its provisions, amendments to the Constitution were published in the September issue of the MONTHLY.

Amendments suggested to the By-Laws are given below:

Note:—Changes or additions indicated by italics.

BY-LAWS

ARTICLE I—MEMBERSHIP IN THE SOCIETY

Section 1, paragraph 2—The active members of the Society shall be those who are members in good standing in component societies and those not members of component societies but active members of this Society in

good standing at the time of the adoption of these By-Laws, *and all physicians in good standing in counties in which there is no component society, provided they meet all the requirements of the State Society, and have the endorsement of the present members of the Society from such county.*

Section 6—Omit.

ARTICLE II—COMPONENT SOCIETIES

Section 3—Omit.

Section 9—Omit.

Section 12—Omit.

ARTICLE III—GENERAL MEETINGS

Section 2—At each annual meeting there shall be an address by the President and not more than two *addresses* by invited guests.

Section 7—All papers and contributions are the property of the Society and cannot be published *elsewhere* without the consent of the Publication Committee.

ARTICLE IV—HOUSE OF DELEGATES

Section 1—The first assembly of the House of Delegates shall be held on the first day named for the annual session. Subsequent meetings shall be held at hours which will not conflict with the scientific program. *The reports of Committees shall be published in the official publication of the Society in the issue preceding the annual session. These reports may be discussed and amended by the House of Delegates. Discussions shall be limited to five minutes.*

ARTICLE V—ELECTION OF OFFICERS

Section 4—The House of Delegates at each annual session shall elect three (3) vice-presidents to rank accordingly, these to represent the various sections of the state, *as far as possible.*

ARTICLE VI—DUTIES OF OFFICERS

Section 3—The President shall deliver the annual *address* and shall have the privilege, *after conference with the chairman of the Program Committee,* of inviting as many as two *guest speakers* at the annual session.

Section 9—The Vice-presidents shall assist the President in the discharge of his duties and the Councilors in their districts in the organization of component societies. In event of the *disability,* death or resignation of the President, a Vice-president, according to rank, shall succeed him for the remainder of his term of office.

Section 11—Omit the words "keep a card index of members."

Section 13—The Executive Secretary-Treasurer shall mail notices to members *at least* two months before the annual session asking for papers and shall, under the direction of the Publication and Program Committee, prepare and send to each member a program of the annual session.

ARTICLE VII—COUNCIL

Section 7—Omit.

ARTICLE VIII—STANDING COMMITTEES

The Standing Committees of the Society shall be as follows:

1. *Publication and Program,*
2. *Scientific Exhibits and Clinics,*
3. *Department of Clinical and Medical Education,*
4. *Legislation,*
5. *Medical Economics,*
6. *Membership,*
7. *Ethics.*

Each of these Committees, *with the exception of the Department of Clinical and Medical Education,* shall consist of three members, *whose term of office shall be for three years. The members having first been appointed for one, two and three years, the incoming President shall appoint to fill vacancies created by expiration of term of office, and shall name the chairman of each committee.* No member may serve on more than one standing committee the same year.

The Department of Clinical and Medical Education shall consist of the State Health Commissioner, the immediate ex-president, who shall be chairman, one member each from the two medical schools of the State, and two members of the Society from the State at large, the last four to be appointed by the incoming president.

(No changes in the next two paragraphs.)

Publication and Program

Section 1—Same as former Section 3.

Scientific Exhibits and Clinics

Section 2—Same as former Section 1, with exception of name.

Department of Clinical and Medical Education

Section 3—*The Department of Clinical and Medical Education shall endeavor to bring about cooperation of the Society with the medical schools, hospitals, clinics, and other teaching institutions of the State with the idea of maintaining the highest standards in these institutions; and to use every means to encourage and advance medical science, and bring it within easy reach of the postgraduate practitioners of the State. The retiring President shall be chairman of this Committee.*

Legislation

Section 4—*The Committee on Legislation shall endeavor to secure and enforce legislation in the interest of public health, scientific medicine, and the moral, social, fraternal, and ethical betterment of the medical profession in the State.*

Medical Economics

Section 5—Same as former Section 4. Omit the second paragraph.

Membership

Section 6—No change.

Ethics

Section 7—No change with exception of omission of

"and Judiciary" wherever these words appear in the whole section.

Section 8—Change to Section 1 of a new Article IX, and caption as follows:

ARTICLE IX—COMMITTEE TO ADMINISTER TRUST FUND FOR POSTGRADUATE CLINICAL EDUCATION

Section 1—*The retiring President shall be chairman of the special Committee of Ex-Presidents to provide a trust fund for postgraduate clinical education.* The executive secretary shall act as secretary. The committee shall be active in securing subscriptions to the trust fund of the Society for postgraduate clinical education. This committee shall receive all contributions to this fund, contract with a good trust company for the investment of same in good securities, and each year pay to the department or committee in charge of clinical education the interest and other revenues accruing from the investment of this fund.

Section 2—Same as second paragraph of Section 1, of former Article IX—DUES.

ARTICLE X (FORMER ARTICLE IX)—DUES

Section 1—Second paragraph changed to previous article, as above stated.

Section 2—*The Executive Secretary-Treasurer* is charged with the duty of collecting or adjusting past due per capita assessments, *after conference with the President, and, if necessary, the Councilor of the district in which the member in arrears resides.* A member whose dues are twelve months in arrears, shall be dropped automatically from the rolls of the Society.

(No change in Articles X, XI, XII, XIII and XIV, except to advance numbers to Articles XI, XII, XIII, XIV, and XV.)

Omit Section entitled "Explanatory Note as to Medical Defense," pages 26-29, inclusive.

J. ALLISON HODGES,
J. C. FLIPPIN,
P. ST. L. MONCURE, *Chairman.*

Report of Delegates to the American Medical Association

TO MEMBERS OF THE HOUSE OF DELEGATES:

The undersigned delegates of the Medical Society of Virginia to the annual meeting of the American Medical Association held at Cleveland, Ohio, June 11th to 14th, respectfully submit the following report. It will be noted that this is a composite report of all three delegates.

The House of Delegates was especially interested in the relationship of organized medicine to the proposals for changes in the present system of medical practice which have been coming from varied sources during the year. The fact that one day prior to the meeting of the American Medical Association the American College of Surgeons on June tenth passed a resolution somewhat inconsistent with the announced policies of organized medicine emphasized the need for the American Medical Association to set forth its principles specifically and definitely. Following a long executive session of the House of Delegates lasting through one entire afternoon, the House adopted a platform of ten principles to guide medical practice and to form the basis for any changes that might be proposed for future discussion. These ten principles, which were the outstanding accomplishment of the House of Delegates in its 1934 session, are set forth as follows:

"First: All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

"Second: No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

"Third: Patients must have absolute freedom to choose a legally qualified Doctor of Medicine who will serve them from among all those qualified to practice and who are willing to give service.

"Fourth: The method of giving the service must retain a permanent, confidential relation between the patient and a 'family physician.' This relation must be the fundamental and dominating feature of any system.

"Fifth: All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

"Sixth: However the cost of medical service may be distributed, the immediate cost should be borne by the patient, if able to pay, at the time the service is rendered.

"Seventh: Medical service must have no connection with any cash benefits.

"Eighth: Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who wish to give service under the conditions established.

"Ninth: Systems for the relief of low income classes should be limited strictly to those below the 'comfort level' standard of incomes.

"Tenth: There should be no restrictions by non-medical groups on treatment or prescribing unless formulated and enforced by the organized medical profession."

ACTION OF THE HOUSE OF DELEGATES RELATING TO PUBLIC HEALTH MATTERS

Dr. Draper served as chairman of the committee of the House of Delegates on Hygiene and Public Health. Perhaps the most important of the matters referred to this committee was the subject of birth control, which was presented in two separate resolutions, both of which favored provision by the House of Delegates for the study of the whole subject with a view to securing some form of favorable action by the House in the future. Both resolutions on birth control were tabled.

Other resolutions reported favorably by the committee and adopted were as follows:

1. A resolution asking the support of the American Medical Association for certified raw milk.
2. A resolution opposing the exploitation of drugs, remedies, etc., over the radio.
3. A resolution asking the American Medical Association to join with other medical associations and agencies in a plan to undertake the chemical analysis of foods upon a broad and impartial scale and to study the relationships of the different chemical elements with scientific care.

It was the feeling of your delegates that the questions which vitally concern the progress and welfare of the medical profession were discussed thoroughly and frankly and that through the guiding principles which were laid down and other actions of the House of Delegates, which will be reported in detail in publications of the organization, a firm foundation was laid upon which the State and local societies may base their judgments and actions during the current year.

WARREN F. DRAPER,
J. C. FLIPPEN,
HUGH H. TROUT.

Correspondence

A Plan to Evaluate Independently Serologic Procedure for the Diagnosis of Syphilis in the United States.

WASHINGTON, D. C.,
AUGUST 25, 1934.

TO THE EDITOR:

There is transmitted herewith a news notice referring to a plan to evaluate serologic procedure for the diagnosis of syphilis in the United States. Your cooperation in the publication of this information will be appreciated.

H. S. CUMMING,
Surgeon-General.

A PLAN TO EVALUATE INDEPENDENTLY SEROLOGIC PROCEDURE FOR THE DIAGNOSIS OF SYPHILIS IN THE UNITED STATES

Since the serologic conferences at Copenhagen and Montevideo, there has been an increased interest in the relative value of serologic tests for the diagnosis of syphilis. At these conferences the test of only one serologist of the United States was presented for consideration. There are a number of excellent serologists in this country, many of whom have described original modifications of the complement-fixation and precipitation tests for syphilis. It is felt that the tests of these workers merit consideration.

The United States Public Health Service is cooperating with the American Society of Clinical Pathologists in the drafting of a plan to evaluate independently serologic procedure for the diagnosis of syphilis in this country. Briefly, the plan contemplates the collection of specimens of blood from at least 1,000 individuals and the distribution of comparable specimens to the laboratories of serologists who have described an original modification of a complement-fixation or precipitation test for the diagnosis of syphilis. The donors of the specimens will be carefully selected so as to measure both the specificity and sensitivity of the serologic procedure. The sending of specimens to workers at considerable distance from the point of collection will be expedited by the use of the most modern transportation facilities, while the delivery of specimens to nearby serologists will be delayed so as to make the delivery time aproximate that for those workers at the more remote points.

A committee of five members consisting of two specialists in the field of clinical syphilology, two members of the American Society of Clinical Pathologists, and one officer of the United States Public Health Service will organize the plan of study and, after all laboratory reports have been submitted by participating serologists, will interpret the results on the basis of clinical findings. The collection of the specimens will begin about December 1, 1934, and a number of serologists will be invited to take part in the evaluation scheme.

It is possible that the name of some serologist who has described an original modification of a test for syphilis may have been inadvertently omitted. Any serologist desiring to participate will be extended an invitation upon presentation of suitable proof as to the originality of his modification of a serologic test. A brief description of the plan will also be sent to those workers who may be interested.

Correspondence should be addressed to the Surgeon-General, United States Public Health Service, Washington, D. C.

A Suggestion.

WARRENTON, VA.,
SEPTEMBER 15, 1934.

TO THE EDITOR:

In my opinion, the time has come when the Medical Society of Virginia should protect its members as far as possible whenever it may be necessary, that we should have in this society a division or a

committee to help the individual doctor fight his battle. We feel the need of protection more and more. If the Federal Government or State Government takes advantage of a doctor he has no organization to appeal to, but I understand the bricklayers have. If an insurance company treats a doctor in a most disgusting and dishonest manner he has no organization from which he may receive advice and help, but many of our unskilled laborers do have organizations that protect them.

I believe that a great many doctors throughout the State would be deeply interested if at Alexandria this matter could be discussed with the idea of inducing our society to act as a clearing house for complaints and to render the individual doctor advice and help whenever possible.

M. B. HIDEN.

Analyses, Selections, etc.

On Country Doctors.

The "Old One" lay dying. It was not the soldier of Tannenberg, and Verdun who lay there; the iron-handed leader of iron-hearted troops; nor the statesman, president and savior of a young democracy; nor the proud Prussian over-lord of wide stretching estates. In the uneasy twilight of a life soon to end, he was merely "De Alte," old, tired, a little fearful of the last great adventure.

A world watched at his bedside. Great specialists were there. "Der Alte" had not asked for them. They were there at the command of a sympathetic and anxious nation. All "Der Alte" asked for was an old, trusted friend. The official physician at the bedside of the dying von Hindenburg was an humble, unknown country doctor.

The science of medicine has its hazards and its heroes. We are likely to know and remember the more spectacular of them . . . the "microbe hunter" in his laboratory, the highly fee-ed specialist in his swank consulting room . . . the skilled surgeon at the operating table. We are too often likely to leave unhonored and unsung the leaders of the shock troops in society's war against disease . . . the hard-working, intelligent general practitioner . . . the humble, unknown, country doctor.

The country doctor is the jack of all medical trades. He has to be. He can't divide the human body like an apple and take only the share that interests him. He must deal with every human hurt quickly and competently. He must be his own diagnostician, consultant, clinic, nurse, interne, anaesthetist, physician and surgeon. He must fight ague and fever where he finds them, as he finds them, with whatever weapons he can lay his hands upon. And there are as many miracles of healing performed in the flickering shadows of a lamp-lit country home as there are in aseptic whiteness of a hospital operating room.

No. Your country doctor wins little fame and less money. He is first called and last paid. His hours and services are the community's . . . from morning until night . . . and even on into the night if necessary. Man's oldest enemy knows no quitting time, acknowledges no code of fair competition. He grants the country doctor few holidays and no vacations. That's why few country doctors play golf or bridge. It's not always convenient to deliver the milkman's lusty seventh between rubbers.

But what would we do without him. He brought us into the world and, since mother and son are both doing nicely after these nearly forty years, he must have done a good job of it. He coddled us through a precarious first year, a colicky second summer. Mumps, measles, whooping cough, the common ailments of childhood he took in his stride. Against scarlet fever, diphtheria and the major foes he battled valiantly and successfully. He brought us through.

The boy grew older, as we all do. And like all of us as he grew older and easier in circumstances he forgot the country doctor. He became peculiar and anxious about his health. And so he went to specialists who carved him up like an apple, each taking the slice which interested him. He had a doctor for his eyes and throat, one for his nerves, one for his respiratory system, one for his digestion, etc., and a diagnostician like a straw boss to parcel out the work among the crew. It was an expensive process but he could afford it, and he enjoyed the attention . . . for a while.

Then came to the boy . . . as there comes to all men . . . a time when all the skill of highly trained specialization cannot win. The machine runs down of itself. When hope despairs and science shakes its head, he remembers again an old friend. In the uneasy twilight of life he is just "the old one," old, tired, a little fearful of the last great adventure.

So he who brought him into life, eases him sympathetically out of it. "At his bedside were four famous specialists and an unknown country doctor."

—(*The Herald-Progress,* Ashland, Va., August 9, 1934.)

Public Health Statistics

I. C. RIGGIN, M. D.

Health Commissioner of Virginia

The communicable disease report for August, 1934, shows the following cases: Typhoid and paratyphoid fever, 144; Diphtheria, 56; Scarlet Fever, 95; Measles, 161; Meningitis, 2; Poliomyelitis, 23; Rocky Mountain Spotted Fever, 12; Undulant Fever, 3; Tularemia, 3.

Typhoid and Paratyphoid Fever was reported from 44 counties and 7 cities.

Diphtheria was scattered in 25 counties and 5 cities.

The scarlet fever cases were reported from 32 counties and 7 cities.

The cases of measles were reported from 25 counties and 5 cities.

Epidemic meningitis was reported from: Dickenson, 1; Roanoke City, 1.

Poliomyelitis was reported from: Appomattox, 1; Bedford, 2; Bland, 1; Fairfax, 2; Hanover, 1; Lee, 1; Page, 1; Rockingham, 2; Spotsylvania, 1; Warren, 1; Wise, 6; Charlottesville City, 1; Alexandria City, 2; Petersburg City, 1.

The cases of Rocky Mountain Spotted Fever were reported from: Bedford, 1; Caroline, 1; Fairfax, 1; Greene, 1; Orange, 1; Prince William, 1; Richmond, 1; Westmoreland, 1; Alexandria City, 1; Richmond City, 3.

Undulant Fever was reported from: Albemarle, 1; Augusta, 1; Frederick, 1.

Tularemia was reported from: Fluvana, 1; Pittsylvania, 1; Prince George, 1.

DIPHTHERIA

The history of diphtheria in this country has been markedly affected by the discovery, first of antitoxin and later toxin-antitoxin. Continued research and study on various immunizing agents made in the past twenty years has resulted in an Alum Precipitated Toxoid, one dose of which produces over 90 per cent immunity within six weeks.

Evidence of the change in diphtheria rates may be found in the records of cities having a population of 100,000 or more. At the beginning of this century approximately a third of these cities recorded diphtheria death rates of forty or more per 100,000 population and two-thirds of them reported rates of twenty or more. Since 1914 no city has reported a rate of forty and since 1930 none has had a rate of twenty or more. During 1933 approximately 12 per cent of the ninety-three cities having a population of 100,000 or more demonstrated that deaths from diphtheria need not occur, a fact first demonstrated in a city of this population group in 1927.

In the State of Virginia the average number of cases for the past ten years has been 2,836 per year. In 1931 there is on record 4,866 cases; 1932, 2,057; and 1933, 2,139. A morbidity rate of 87.6 per 100,000 population and a death rate of 7.3 per 100,000 in 1933 indicates that there is still a lot to do in reducing the prevalence of the disease in this State. Since 39.8 per cent of all cases and 76.5 per cent of all deaths from diphtheria in Virginia are in children under six years of age, the hope for control lies in 100 per cent immunization of the child population.

Less than 90 per cent of children at one year of age have natural immunity to diphtheria, so every child should be given Toxoid when six montths old and, if practical, Schick tested two months later to be sure immunity is obtained. When a child enters school he should be Schick tested again to determine his immunity status, and if positive given a dose of Toxoid.

Woman's Auxiliary
to the
Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

Official Call.

TO THE MEMBERS OF THE WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF VIRGINIA:

It is my pleasure as your President to issue the Official Call for the Twelfth Annual Convention of the Woman's Auxiliary to the Medical Society of Virginia, to be held in Alexandria, October 9th, 10th and 11th. It is my desire that every Auxiliary be well represented. I look forward to meeting you all at this Convention.

MRS. WILLIAM LETT HARRIS.

Invitation to Alexandria.

The Woman's Auxiliary to the Alexandria Medical Society extends a most cordial invitation to all members of the Woman's Auxiliary and to the wives and daughters of the members of the Medical Society of Virginia, to attend the annual meeting to be held in Alexandria, October 9th-11th.

Alexandria is centrally located, with good roads in all directions, several railroads, and is of easy access.

Our plans are for your entertainment and we are looking forward with great pleasure to your coming.

MRS. HENRY A. HORNTHAL,
Secretary, Woman's Auxiliary,
Alexandria Medical Society.

P. S. Please, Doctor, be sure to take this copy of the MONTHLY to your wife.

PROGRAM
Twelfth Annual Meeting
Belle Haven Country Club
Alexandria, Virginia **October 9-10-11, 1934**

Every woman attending the convention is cordially invited to attend these meetings.

Tuesday, October 9th

Registration, 5:00 to 8:00 P. M. at the George Mason Hotel.

Every woman is requested to register immediately upon arrival.

8:00 P. M.—Opening meeting of the Medical Society of Virginia at Elks Hall.

Wednesday, October 10th

8:00 A. M.—Registration Booth open. George Mason Hotel.

8:15 A. M.—Pre-Convention Board Meeting Breakfast at the Anchrage (subscription).

(All County Presidents, Presidents-Elect, Vice-President when there is no President-Elect, and State Officers and Chairmen are expected to be present.)

10:15 A. M.—GENERAL ANNUAL MEETING, at the Belle Haven Country Club.

President presiding—Mrs. William Lett Harris, Norfolk.

Invocation—Rev. Mr. Percy Foster Hall, Rector of St. Paul's Episcopal Church, Alexandria.

Address of Welcome—Mrs. Llewellyn Powell, Alexandria.

Response—Mrs. J. Allison Hodges, Richmond.

Report of Committee on Arrangements—Mrs. G. T. Klipstein, Alexandria.

Roll Call of County Auxiliaries—Mrs. Fletcher J. Wright, Petersburg.

In Memoriam—Mrs. T. Elmore Jones, Portsmouth.

Minutes of Eleventh Annual Meeting—Recording Secretary, Mrs. Fletcher J. Wright, Petersburg.

President's Report—Mrs. William Lett Harris.

President's Announcements.

REPORTS:

Corresponding Secretary—Mrs. Chas. A. Saunders, Norfolk.

Treasurer—Mrs. Reuben F. Simms, Richmond.

State Chairmen:

Organization—Mrs. Joseph Bear, Richmond.

Program and Health Education—Mrs. Southgate Leigh, Norfolk.

Finance—Mrs. James K. Hall, Richmond.

Legislation—Mrs. T. W. Murrell, Richmond.

Public Relations—Mrs. W. F. Drewry, Richmond.

Hygeia—Mrs. C. Lydon Harrell, Norfolk.

Revisions—Mrs. Eugene L. Lowenberg, Norfolk.

Press and Publicity—Mrs. William T. Sanger, Richmond.

Printing—Mrs. H. R. Drewry, Norfolk.

Convention—Mrs. Charles L. Rudasill, Richmond.

Courtesy—Mrs. C. J. Andrews, Norfolk.

Exhibits—Mrs. H. M. Snead, Petersburg.

Jane Todd Crawford—Mrs. F. P. Barrow, Jr., Portsmouth.

Archives—Mrs. J. Allison Hodges, Richmond.

Historian—Mrs. J. Allison Hodges, Richmond.

Parliamentarian—Mrs. M. N. King, Norfolk.

COUNTY PRESIDENTS:

Mrs. W. S. Snead, Newport News, Auxiliary to Warwick County Medical Society.

Mrs. B. E. Hunt, Hampton, Committee to Elizabeth City County Medical Society, working with Warwick County Auxiliary.

Mrs. J. B. Stone, Richmond, Auxiliary to Richmond Academy of Medicine.

Mrs. Philip Jacobson, Petersburg, Auxiliary to Post-Graduate Medical Society.

Mrs. Jas. B. Abbitt, Norfolk, Auxiliary to Norfolk County Medical Society.

Mrs. Hawes Campbell, Enfield, Auxiliary to Mid-Tidewater Medical Group.

Mrs. F. O. Plunkett, Lynchburg, Auxiliary to Lynchburg Medical Society.

Mrs. J. R. Tucker, Williamsburg, Auxiliary to James City and New Kent County Medical Society.

Mrs. Llewellyn Powell, Alexandria, Auxiliary to the Medical Society of Alexandria.

DELEGATES:

Woman's Auxiliary to the American Medical Association—Mrs. J. B. Stone, Richmond.

Woman's Auxiliary to the Southern Medical Association—Mrs. Lee E. Sutton, Richmond.

UNFINISHED BUSINESS.

NEW BUSINESS.

REPORTS:

Committee on Resolutions—Mrs. Meade Edmunds, Petersburg.

Committee on Credentials.

Nominating Committee—Mrs. M. N. King, Norfolk.

Election of Officers.

2:30 P. M.—Drive to Arlington.

4:00 to 6:00 P. M.—Afternoon tea at the home of Mrs. H. A. Latané, 311 North Washington St.

8:00 P. M.—Post Convention Board Meeting—Mrs. Joseph Bear, Richmond, Presiding.

9:00 P. M.—Reception at Gadsby's Tavern.

Thursday, October 11th

9:00 A. M.—Registration Booth Open.

10:00 A. M.—Visit to Historical Places.

1:00 P. M.—AUXILIARY LUNCHEON, Belle Haven Country Club (subscription). Honoring our National and Southern Presidents:

Mrs. Robert W. Tomlinson, Wilmington, Delaware.

Mrs. Southgate Leigh, Norfolk, Virginia.

GREETINGS:

The President of the Medical Society of Virginia, Dr. R. D. Bates, Newtown, Virginia.

The President of the Alexandria Medical Society, Dr. S. B. Moore.

FIVE MINUTE TALKS BY:

President-Elect of the Medical Society of Virginia, Dr. F. H. Smith, Abingdon.

General Chairman of Women's Activities, Dr. Llewellyn Powell, Alexandria.

Chairman and Members of the Advisory Council:

Dr. J. Allison Hodges, Richmond.

Dr. Lee E. Sutton, Richmond.

Dr. Southgate Leigh, Norfolk.

ADDRESSES:

President of the Auxiliary to the American Medical Association, Mrs. Robert W. Tomlinson, Wilmington, Delaware.

President of the Auxiliary to the Southern Medical Association, Mrs. Southgate Leigh, Norfolk, Virginia.

Installation of Officers conducted by Mrs. M. N. King, Norfolk.

Presentation of Gavel.

Address of the President—Mrs. Joseph Bear, Richmond.

Adjournment.

Board Meeting Breakfast, sixty cents.
Auxiliary Luncheon, eighty-five cents.

New Members

Since the names listed in the May issue of the MONTHLY, the following have been admitted to membership in the Medical Society of Virginia:

Dr. George B. Arnold, Colony.
Dr. William C. Barr, Jr., Ashburn.
Dr. Francis I. Bloise, Lorton.
Dr. Altamont Bracey, Welch, W. Va.
Dr. Samuel F. Driver, Troutville.
Dr. Hal Davis Roanoke.
Dr. Frederick L. Finch, Richmond.
Dr. H. Rudolph Hartwell, Roanoke.
Dr. L. Floyd Hobbs, Jewell Ridge.
Dr. Thomas N. Hunnicutt, Newport News.
Dr. Arthur D. Hutton, Marion.
Dr. Carl W. LaFratta, Richmond.
Dr. Cullen M. McCoy, Norfolk.
Dr. H. C. McCoy, Gordonsville.
Dr. Joseph P. Madigan, Washington, D. C.
Dr. Harold W. Miller, Woodstock.
Dr. Michael W. Minor, Comorn.
Dr. Thomas B. Payne, Fredericksbug.
Dr. Frederick W. Shaw, Richmond.
Dr. D. Thornton Saffer, Middleburg.
Dr. Carl W. Shaffer, Alexandria.
Dr. Carolyn A. Sherrill, Marion.
Dr. Jessie T. Scott, Vienna.
Dr. James W. Sinclair, Warrenton.
Dr. P. B. Stoke, Norfolk.
Dr. Frank A. Strickler, University.
Dr. William H. Turner, Jr., Round Hill.
Dr. Thomas D. Walker, Jr., Newport News.
Dr. Dawson E. Watkins, Waynesboro.
Dr. Bliss K. Weems, Waynesboro.
Dr. William B. Wilkins, Alexandria.

Book Announcements

The Management of Fractures, Dislocations, and Sprains. By JOHN ALBERT KEY, B. S., M. D., Clinical Professor of Orthopedic Surgery, Washington University School of Medicine; Associate Surgeon, Barnes, Children's and Jewish Hospitals, St. Louis. And H. EARLE CONWELL, M. D., F. A. C. S., Orthopedic Surgeon for the Tennessee Coal, Iron and Railroad Company, Birmingham, Ala.; Orthopedic Chief of the Traumatic and Orthopedic Services of the Employees' Hospital, Fairfield, Ala. St. Louis. The C. V. Mosby Company. 1934. Octavo of 1164 pages. With 1165 illustrations. Cloth. Price, $15.00.

Most reviews of books usually make the statement that the particular book being reviewed is of great value to every class of practitioner. This book by Key & Conwell is an exception in the fact that it is a perfectly practical book which can be employed to great advantage by any doctor who has to treat fractures, dislocations or sprains.

The index is such that the information desired can be easily and accurately found, and when found the information is given in a practical manner. While there are sufficient references to the literature, such are not so voluminous as to be confusing.

In these times when so many people are looking for grounds for suits against doctors one will find the chapter on "Medico-legal Aspects of Fracture Cases" of great aid in preventing such occurrences.

The first part of the book is given over to the consideration of the general underlying principles of diagnosis and treatment. This has been handled in a most comprehensive manner. In the second part of the book careful consideration has been given to special fractures.

Having visited Dr. Conwell's well-conducted clinic in Birmingham, I was not at all surprised to see the very practical manner in which the various subjects were presented. To any one who has not had the opportunity of seeing Dr. Conwell's work, I want to assure them the methods he advocates are not the theoretical suggestions of a student of the literature, but the results of the observation of an exceptionally clear student based largely on an unusually large clinical experience. I have never visited Dr. Key's Clinic in St. Louis, but, the position he occupies in the Midwest is such as to give much weight to any opinion he expresses.

The authors have very wisely selected the late Dr. Charles E. Dowman to write the chapter on "Fractures of the Skull and Brain Trauma," and Dr. J. B. Brown to write the chapter on "Fractures of the Jaws and Related Bones of the Face." Both of the authors have presented these specialized subjects in an unusually practical manner.

This is one textbook I can and do heartily recommend, and I feel that no hospital or doctor should be without a copy of it, if they expect to treat injuries. In the automobile age in which we are living it is almost impossible for any doctor not to be called on to treat accidents sometimes.

HUGH H. TROUT, M. D.

The Power to Love. A Psychic and Physiologic Study of Regeneratation. By EDWIN W. HIRSCH, B. S., M. D., Associate in Urology, College of Medicine, University of Illinois. New York. Alfred

A. Knopf. 1934. Octavo of 363 pages. Cloth. Price, $4.00.

This is a book of refreshing candor and frankness, advocating a return to the healthy sanity of the ancient Greeks, whose attitude toward sex is characterized by that Athenian philosopher, who, when discovered busily engaged beneath the portico of the temple and queried as to his actions, casually replied "Hominem planto." The author's avowed purpose, however, is the treatment and prevention of psychic impotence and related disorders. To this end, he urges the urologist to lay down his endoscope in order to study the psychology of sexual disturbances. Stating that a severe neurosis is too high a price to pay for the so-called benefits of abstinence, he delivers a polemic against educators who warn youth that loss of semen results in diminished strength and mentality, as illustrated by the quite dissimilar example of the castrated animal. On the contrary, the author believes that the proper exercise of coitus is necessary to prevent possible weakening of the prostatic musculature with consequent infection, and to enable the individual to learn and maintain control of ejaculation, just as a child must condition the reflexes of defecation and urination.

A rather complicated recipe for the successful consummation of the sexual act is given in detail, which he claims will do much to prevent or alleviate impotency, premature ejaculation, and frigidity.

Unfortunately, the author occasionally allows his enthusiasm to run beyond the limits of known physiology, as when he claims that during intercourse "Both lobes of the pituitary gland actively produce their characteristic hormones, which are necessary to bring about spasmodic muscular contractions—," and "A muscle which has been stimulated to the nth degree must suffer grave injury if its action is inhibited just prior to contraction." Similar loose statements are scattered throughout the text, but do not seriously weaken his plea that we look upon sex as a biological appetite rather than as a theological sin.

ROLLAND J. MAIN.

Manual of the Diseases of the Eye. The Students and General Practitioners. By CHARLES H. MAY, M. D., Director and Attending Surgeon, Eye Service, Bellevue Hospital, New York, 1916 to 1926; Consult-Ophthalmologist to Mt. Sinai Hospital, etc. Fourteenth Edition, Revised. Baltimore. The Williams and Wilkins Company. 1934. Octavo of 496-v pages, with 376 Original Illustrations Including 25 Plates, with 78 Colored Figures. Cloth. Price, $4.00.

The popular textbook of Dr. May has now reached its fourteenth edition, the thirteenth having been published in 1930. The high standard of excellence which characterized the previous editions is evident in this. If one ventures to criticise so excellent a book, the criticism would be from the standpoint of the teacher of undergraduate medical students. Elaborate classification of eye diseases is of less value to the medical student than the inter-relations of diseases of the eye and of other parts of the body. More emphasis on pathology is desirable. The experience of many eye clinics in the past few years would justify less emphasis upon syphilis as the cause of disease of the uveal tract and more emphasis on small foci of infection.

Advances on ophthalmic surgery are indicated by several new and better illustrations and by reference to the newest method of surgical treatment of detachment of the retina, namely, diathermic coagulation.

This textbook continues to be, as it has been for many years, one of the most comprehensive brief manuals in medical literature.

EMORY HILL.

New and Nonofficial Remedies, 1934, containing descriptions of the articles which stood accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1934. Cloth. Price, postpaid, $1.50. Pp. 510; lx. Chicago: American Medical Association.

New and Nonofficial Remedies, 1934, has the same pleasing format and helpful mechanism that has characterized it in past years. The enrichment of the indexing started a few years ago is continued and its value even increased by some desirable simplification of cross references.

The Council has made the usual careful revision of the book. A number of revisions of the Council's Rules have been made, particularly with reference to the names of products, which is one of the most frequent and troublesome of the problems with which the Council has to deal. Comparison with last year's volume will show that revisions of more or less importance occur in many chapters.

Virginia Medical Monthly

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AGNES V. EDWARDS, Richmond, *Business Manager*

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VOLUME 61 OCTOBER, 1934 No. 7

Editorial

Post-Graduate Education.

To a number of medical educators it has semed desirable that some system of compulsory post-graduate study be instituted in this country, some system by which physicians would be relicensed every five years, for instance, on a basis of post-graduate work. But it is hardly time to talk about compulsory education when the opportunities for advanced study are so scarce for those who would voluntarily undertake it. For a long time this has been recognized as one of the weaknesses in American medical education. In Virginia the Medical Society as well as the two medical colleges are making gestures in this direction but much more serious effort must be expended before we can consider ourselves as more than scratching the surface.

Vanderbilt University, in a graduate department now largely supported by the Commonwealth Fund, though limited in its extent is doing the job as it should be done. The plan as worked out there provides for two four-months courses to each of which no more than ten native rural physicians are eligible. The fund pays to each physician taking the course $300 and his railroad fare. The physician pays the University $125 for his course. The course is really a miniature fourth year medical course. Students receive personal attention, have intimate contacts with patients and laboratory procedures and actually come up through their medical instruction rather than have it showered down upon them as is so often the case in post-graduate teaching. A month in physical diagnosis and clinical laboratory procedures is followed by three weeks periods of ward work in medicine, surgery, pediatrics, and gynecology and obstetrics. Public health is emphasized in a series of lectures augmented by definite periods of field work. Out of such a course the average practitioner emerges not only with enthusiasm engendered by stimulating scientific contacts but, what is more important and what the average post-graduate course has not been able to achieve heretofore, with his medical knowledge greatly augmented and his armamentarium greatly extended.

The Changing Medical Curriculum.

Perhaps few physicians who graduated two decades ago and are not now associated with the actual teaching of medicine in an institution realize what changes have come over the medical curriculum in this time, beyond knowing that there are few colleges that have not raised their entrance requirements.

In most medical colleges the changes in the curriculum itself have probably been most radical in the first and second years. Take Columbia, for example. From the first year such courses as pharmacy and organic chemistry have been entirely dropped and physiological chemistry, giving place to biological chemistry, has greatly expanded in importance and in the number of hours assigned it. Anatomy which was once a stiff course occupying the greater

part of two years has been compressed into the first part of the first year. Physiology has also been abbreviated and advanced to the first year entirely. Into the second year the department of medicine has reached down to demand twice the attention it demanded twenty years ago. Neurological examinations have been begun, and a new face is encountered—psychopathology.

Changes have also come to the last two years. In the third year as formerly we first encounter the specialties, each still clamoring for its place in the sun, but they have now been assigned positions better proportioned to their relative importance in the general field of medicine. Particularly noticeable is the tendency to continue the teaching of the specialties into the fourth year. In the third year psychiatry now assumes large proportions and public health, elevated from a mere lecture course to an imposing Institute, lays especial claim to our attention. The history of medicine is not taught as a separate course although it has in many institutions assumed importance not only because of its cultural value but because it furnishes an admirable forum for the correlation of all medical teaching. Therapeutics as a separate course no longer appears, reliance being placed upon each department to take care of its own therapy. Medicine and surgery still remain the dominant chairs of the faculty and the time allotted to them in the last two years has changed but little. More and more insistence is placed by these departments upon the intimate and personal contact of students and patients under skilled guidance and control, and greater emphasis is being laid upon the correlation of the fundamental subjects as well as of the specialties with the broad fields of both medicine and surgery. The number of elective courses now available to medical students has been multiplied many times, and a reduction in the total number of hours required for graduation has been made so as to give students more time to undertake such elective work as may be had in clinics devoted to goitre, allergy, arthritis, tuberculosis, heart and gastro-intestinal diseases.

Urinary Calculi.

Man has suffered from urinary calculi for a long time. Stone in the bladder of an Egyptian mummy 7,000 years old has been found by Professor Elliot Smith. Physicians have been busy getting rid of them for many years also. Cutting for stone was an old operation in the time of Hippocrates. First attempted only by the quacks, it later became one of the earliest operations successfully undertaken by respectable surgeons. Not a little publicity sometimes attached to these operations. Pepys celebrated annually the successful removal of a calculus from his bladder. All the problems suggested by urinary calculi are not concerned with surgical removal. Why calculus formation in the first instance? How can we prevent it? Can we remove it without resort to surgery? The answer to the first question naturally has important bearing upon the solution of the other two and within recent years we have apparently gotten closer to this long sought for explanation.

There was a time not more than twenty years ago when a leading textbook on surgery stated that the cause of urinary calculi was a catarrh of the urinary tract produced by excessive acidity of urine which was itself the result of the excessive ingestion of meat. Diet for a long time was considered of great importance in the formation of stone, the contention being that all one had to do to prevent recurrence was to know the nature of the stone, and then to reduce or eliminate those elements in the diet that had gone to its formation. For example, diets low in oxalic acid were advocated in the case of oxalate stones, diets low in the forerunners of uric acid, in uric acid stones. It has been seriously questioned, however, whether with the dietary variations possible under normal conditions these factors have anything to do with calculus formation (Keyser).

The importance of the reaction of the urine has had serious consideration from a number of quarters. The fact that phosphatic stones are usually found in the presence of an alkaline urine, and that uric acid stones are associated with increased hydrogen ion concentration have led some authorities to advocate measures directed at changing the urinary reaction in such a way as to make it theoretically unfavorable to the particular stone encountered. By this means Lowsley claims to have prevented stone recurrence.

Then we were told that experiments upon rats showed that diets deficient in vitamin-A were productive of calculus formation in the urinary tract in a large percentage of the animals, and that simi-

lar deficiencies in the human diet might also be important factors in calculus formation. It was pointed out that the high incidence of urinary stones among the Chinese could be explained on this basis. Then it was shown that the urine was usually alkaline when animals were kept on a low vitamin-A diet and suspicion as to the real factors shifted from vitamin deficiency to alteration in the hydrogen ion concentration associated with changes in the protective colloids. The point seemed to be strengthened by the separate work of Higgins and Cothran who showed that ammonium chloride or acid sodium phosphate may be used to combat successfully stone formation in animals even though they are on a diet deficient in vitamin-A.

Ultimately hyperparathyroidism, with its astonishing upset of calcium metabolism in the body, depletion of the bony reservoir and flooding of the blood serum and urine with excess quantities of this element, was shown to be intimately connected with calculus formation in the urinary tract. The important role of stasis and infection seems to have been strengthened rather than weakened by these discoveries, because both stasis and infection are important factors in determining the hydrogen ion concentration of the urine, and the effectiveness of the protective colloids in preventing precipitation of crystalline substances held in this astonishingly supersaturated solution.

Ergotamine Tartrate in Migraine.

For a number of years European physicians have been advocating the use of ergotamine tartrate in the treatment of migraine. In a May issue of the *New England Journal of Medicine*, W. G. Lennox, reports a small but apparently significant series of cases in which the drug was astonishingly effective. Forty out of the forty-five patients to whom it was given experienced an abrupt termination of the attack. There is to be expected no diminution in the frequency of the attacks, treatment having to be administered promptly at the onset of each new one. Unfavorable reactions appear to be mild and, except for pregnancy and cardiovascular disease, there seem to be no contraindications. In the experience of Lennox oral administration does not offer satisfactory results. Where prompt relief is desired, he advocates an immediate dose of .5 c.c. (.25 mg.) of the drug intravenously and an equal quantity subcutaneously.

The pharmacologic action of ergotamine tartrate is supposed to be antagonistic to adrenalin. It is considered a stimulant to smooth muscle contraction and a depressant to the sympathetic nervous system. In the relief of migraine it is assumed to paralyze the motor sympathetic while relieving vascular spasm believed to be a factor in the production of this pain. Further investigations of the drug promise not only relief from a most widespread and disabling affliction, but possibly a solution to a vexed and hitherto unanswered question—what is the mechanism of the production of the pain of migraine?

Department of Clinical Education of the Medical Society of Virginia

Postgraduate Program in Obstetrics Completed.

The tenth and last circuit of Dr. Lapham's classes, in the territory from Alexandria to Orange, was completed on September 15th, bringing to an end the Medical Society's two and a half year program in prenatal and postnatal care.

Figures concerning attendance at these classes are given below:

	Members		*Visitors*		*Attend.*	
	No.	*Pres.*	*No.*	*Pres.*	*Av.*	*Pct.*
Alexandria	8	56	4	4	6.0	70.0
Fairfax	13	76	10	10	8.6	58.4
Fredericksburg	4	35	13	15	5.0	87.5
Culpeper	6	43	1	1	4.4	70.1
Orange	5	42	4	5	4.7	84.9
Total	36	252	32	35	28.7	70.0

A complete summary of the whole two and a half year program in obstetrics is included in the Department's report to be made to the House of Delegates.

According to the testimony of practically all the physicians who have been in touch with this work, it has been extremely well worth their while. There is no concrete way of measuring the success of these classes, since maternal mortality rates have changed very little in the past thirty years, but the attendance rate of 76 per cent of enrolled members through two and a half years, the almost unanimous approval expressed by them and their desire for further work conducted in a similar manner, may be accepted as evidence that the physicians considered the classes valuable.

Pediatric Course in Leesburg.

Since the funds available for pediatric instruction this year were not sufficient to institute any sort of state-wide program in the subject, it was decided to concentrate on one good short course as an example of what might be done.

The Fauquier and Loudoun County physicians at a meeting of the Loudoun Society voted their approval of the course, which was scheduled for September 3rd to 14th.

Since the time for organizing the course was very short, the Department considers itself fortunate to have obtained the services of so well qualified an instructor as Dr. Geo. M. Lyon, of Huntington, West Virginia. The attendance and enthusiastic support of the class have far exceeded expectations. Detailed figures are given below:

Members		*Visitors*		*Attend*	
No.	*Pres.*	*No.*	*Pres.*	*Av.*	*Pct.*
*18	130	10	20	15	76.4

Of the eighteen members enrolled, five attended every class. Fifteen replies to the questionnaires sent out were received, and all said they considered the lectures excellent, and thirteen of them expressed a desire for future courses in other subjects. In addition, eleven personal letters from physicians attending the pediatric class were sent in, and all of the writers expressed their gratitude for the opportunity which had been offered them and their esteem of Dr. Lyon.

The members enrolled in the Leesburg course were as follows:

Dr. W. O. Bailey, Leesburg.
Dr. W. C. Barr, Ashburn.
Dr. J. E. Claggett, Hamilton.
Dr. C. O. Dearmont, White Post.
Dr. H. P. Gibson, Leesburg.
Dr. John A. Gibson, Leesburg.
Dr. Thomas A. Gibson, Winchester.
Dr. M. B. Hiden, Warrenton.
Dr. A. B. Householder, Lovettsville.
Dr. C. P. Hutchinson, Purcellville.
Dr. C. H. Iden, Berryville.
Dr. G. H. Musgrave, Leesburg.
Dr. D. T. Saffer, Middleburg.
Dr. E. C. Shull, Herndon.
Dr. G. F. Simpson, Purcellville.
Dr. H. A. Spitler, Middleburg.
Dr. F. C. Tappan, Berryville.
Dr. W. H. Turner, Jr., Round Hill.

In view of the success of this undertaking, the Department of Clinical Education, at its meeting on September 17th, introduced into its report a recommendation for further work in this subject during the coming year.

*One member who enrolled and paid the fee but never attended is omitted in computing the percentage of attendance.

Proceedings of Societies

Fairfax County Medical Society.

Officers elected at the regular meeting of this Society in August are: President, Dr. Jessie M. T. Scott, Vienna; vice-presidents, Dr. E. C. Shull, Herndon, and B. F. Phillips, Quantico; treasurer, Dr. F. M. Brooks, Fairfax Station, and secretary, Dr. E. S. Waring, Fairfax.

The Southside Virginia Medical Association

Met at Piedmont Sanatorium, Burkeville, on September 11th. The meeting was opened with prayer by Dr. Linwood Farley. Dr. I. C. Riggin, State Health Commissioner, welcomed the visiting doctors and stressed the desire that all doctors in the State should avail themselves of the opportunity to

become acquainted with what the State is doing for its tubercular unfortunates, as well as all the other activities of the State Health Department.

Dr. James P. Baker, Richmond, read a very interesting paper on Cardiac Asthma. Drs. Dean B. Cole, Frank Johns and John A. Proffitt then gave a Clinic on the Treatment of Tuberculosis by Collapse Therapy. All the doctors showed much interest in the various steps of this work.

Dr. Herbert C. Jones, Petersburg, is president, and Dr. R. L. Raiford, Franklin, secretary.

After a most delightful dinner the meeting adjourned to meet in Petersburg the second Tuesday in December.

News Notes

On to Alexandria!

Its most time to pack your grip and make a start for Alexandria. The sixty-fifth annual meeting of the Medical Society of Virginia is to be held there, October 9th, 10th and 11th, under the presidency of Dr. R. D. Bates, of Newtown. Apart from the attractions of that section, we are going to have an excellent program of clinics, papers and exhibits, and you really should not miss this meeting. Bring the ladies of your family with you as the Woman's Auxiliary is planning an interesting program of addresses and entertainments for the ladies, whether or not they are members of the Auxiliary.

Though arrangements have not been completed plans are in progress for clinics in Alexandria on Tuesday afternoon, the 9th, and in Washington on Thursday, after lunch. The latter are being arranged by Dr. G. W. Leadbetter of that city, and it is hoped that a large number will stay through that afternoon. Plans will be made for the transportation of those who attend the Washington clinics. Listen at the meeting for announcements as to places and subjects.

Excellent scientific exhibits will be on display in the Public Service Building and commercial exhibits in the George Mason Hotel. Each member is requested to visit both of these displays as you will find much of interest and value.

Help to keep things moving. It will create a greater interest. The Program Committee requests all authors to adhere to the By-Law which limits the reading of papers to fifteen minutes, including the showing of lantern slides, and five minutes for each discussion. The reporter will tap a bell a minute before time expiration and again at the fifteen minute limit on papers and the five minute time on discussions.

Delegates and alternates are especialy urged to look over the reports of Committees in this issue of the MONTHLY and be prepared to act on them promptly when called by name in the House of Delegates.

If you have failed to make reservation at the hotel, do not let that keep you from attending. The local committee will be ready to help you about that or in any way possible.

Just don't forget to come to Alexandria for October 9th, 10th and 11th. You can secure any ininformation desired at the Registration booth in the George Mason Hotel.

Delegates to Alexandria Meeting.

As many matters of interest are to be discussed at the Alexandria meeting of the Medical Society of Virginia, we hope for a full representation in the House of Delegates. Societies which have not reported names of their delegates are urged to send them to the Secretary at 1200 East Clay Street, Richmond, as soon as possible. We have a splendid showing to this time but want one hundred per cent representation in the House.

Below are given names received to time of going to press:

Delegate	*Society*	*Alternate*
	ACCOMAC	
Dr J. H. Hiden		Dr. J. W. Robertson
	ALBEMARLE	
Dr. K. F. Maxcy		Dr. A. D. Hart
Dr. Owen Shelton		Dr. L. G. Roberts
	ALEXANDRIA	
Dr. W. C. West		Dr. J. W. Love
	ALLEGHANY-BATH	
Dr. Courtney Edmond		Dr. R. L. Claterbaugh
Dr. I. T. Hornbarger		Dr. G. A. Torrence

Delegate	*Society*	*Alternate*
	AMELIA	
Dr. J. L. Hamner		Dr. J. M. Habel
	ARLINGTON	
Dr. W. C. Welburn		Dr. S. T. Noland
	AUGUSTA	
Dr. C. P. Obenschain		
	BEDFORD	
Dr. T. P. West		Dr. W. O. McCabe
	BOTETOURT	
Dr. W. H. Saunders		Dr. J. H. Hartwell
	DANVILLE-PITTSYLVANIA	
Dr. P. W. Miles		Dr. I. C. Harrison
	DICKENSON-BUCHANAN	
Dr. George Snead		Dr. T. C. Sutherland
Dr. R. L. Phipps		Dr. A. L. Jones
	ELIZABETH CITY	
Dr. Charles W. Scott		Dr. Robert H. Wright, Jr.
	FAIRFAX	
Dr. E. C. Shull		Dr. Wm. Meyer
	FAUQUIER	
Dr. Martin B. Hiden		Dr. John T. Sprague
	FREDERICKSBURG	
Dr. W. A. Harris		
Dr. L. F. Lee		
Dr. M. W. Minor		
Dr. Roderick Dew		
Dr. Lee Cooke		
	HALIFAX	
Dr. C. B. White		Dr. I. K. Briggs
	LEE	
Dr. G. B. Setzler		Dr. W. J. Innes
	LOUDOUN	
Dr. G. F. Simpson		Dr. W. O. Bailey
	LYNCHBURG ACADEMY	
Dr. George J. Tompkins		Dr. H. H. Hurt
Dr. George T. Harris		Dr. John W. Davis
	MECKLENBURG	
Dr. W. W. Wilkinson		Dr. G. N. Carter
	MID-TIDEWATER	
Dr. E. T. Sandberg		
Dr. James W. Smith		
Dr. W. E. Croxton		
Dr. J. M. Gouldin		
Dr. M. H. Eames		
Dr. L. O. Powell		
Dr. E. C. Cobb		
Dr. H. F. Hoskins		
	NANSEMOND	
Dr. E. C. Joyner		Dr. C. J. Riddick
	NELSON	
Dr. S. G. Miller		Dr. H. G. Dickie
	NORFOLK	
Dr. Julian L. Rawls		Dr. Clayton W. Eley
Dr. P. St. L. Moncure		Dr. Walter B. Martin
Dr. C. Lydon Harrell		Dr. F. C. Rinker
Dr. W. P. McDowell		Dr. N. G. Wilson
Dr. C. Carroll Smith		Dr. Frank H. Redwood
	NORTHAMPTON	
Dr. Griffin Holland		Dr. John R. Hamilton
	NORTHERN NECK	
Dr. W. N. Chinn		
Dr. E. R. Moorman		
Dr. J. H. Hare		
Dr. L. E. Cockrell		
	NORTHERN VIRGINIA	
Dr. George H. Long		Dr. Loring Hammer
Dr. O. W. Carper		Dr. L. F. Hansbrough
Dr. F. C. Downey		Dr. D. O. Foley
Dr. C. O. Dearmont		Dr. C. H. Iden
Dr. P. W. Boyd		Dr. H. H. McGuire
Dr. John P. Snead, Jr.		Dr. C. H. Armentrout
	PATRICK-HENRY	
Dr. W. C. Akers		Dr. J. T. Shelburne
Dr. F. B. Teague		Dr. G. B. Dudley
	POST-GRADUATE	
Dr. J. A. B. Lowry		Dr. W. W. Bennett
Dr. H. C. Jones		Dr. G. S. Fultz
Dr. O. L. Jones		Dr. S. E. Gunn
Dr. G. M. Naff		Dr. C. E. Martin
Dr. W. C. Harman		Dr. F. N. Mallory
Dr. T. F. Jarratt		Dr. W. D. Prince
Dr. W. D. Kendig		Dr. H. E. Whaley
Dr. B. H. Knight		Dr. W. W. Seward
	PRINCE EDWARD	
Dr. Ray A. Moore		Dr. Thomas G. Hardy
	PRINCESS ANNE	
Dr. H. F. Dormire		Dr. T. L. Brooks
	RICHMOND ACADEMY	
Dr. Kinloch Nelson		Dr. Wyndham Blanton
Dr. R. Finley Gayle		Dr. James H. Royster
Dr. Joseph F. Geisinger		Dr. Garland Harwood
Dr. J. M. Hutcheson		Dr. Thomas D. Jones
Dr. W. H. Higgins		Dr. M. O. Burke
Dr. Carrington Williams		Dr. C. R. Robins
Dr. F. P. Fletcher		Dr. Lawrence T. Price
Dr. A. I. Dodson		Dr. R. W. Miller
Dr. C. M. Caravati		Dr. J. N. Williams
	ROANOKE ACADEMY	
Dr. W. L. Powell		
Dr. Frank Farmer		
Dr. Charles H. Peterson		
	ROCKINGHAM	
Dr. Howard Armstrong		Dr F. L. Byers
	SCOTT	
Dr. V. W. Quillen		
	SOUTHAMPTON	
Dr. R. L. Raiford		Dr. James A. Grizzard
	SOUTHWESTERN	
Dr. Philip Smith		Dr. J. C. Motley
Dr. George A. Wright		Dr. T. K. McKee
Dr. C. F. Graham		Dr. C. C. Moore
Dr. R. H. Harrington		Dr. H. T. Smith
Dr. A. B. Woolwine		Dr. F. T. Hauser
Dr. D. S. Divers		Dr. R. H. Woolling
Dr. A. M. Showalter		Dr. J. L. Early

Delegate	*Society*	*Alternate*
Dr. A. N. Chaffin		Dr. C. B. Nuckolls
Dr. W. C. Caudill		Dr. M. C. Newton
	TAZEWELL	
Dr. Isaac Peirce		Dr. J. W. Shawver
	WARWICK	
Dr. E. L. Alexander		Dr. J. W. Sayre
	WISE	
Dr. W. B. Peters		Dr. C. L. Harshbarger or Dr. C. B. Bowyer

The Virginia Pediatric Society

Will hold its annual Luncheon-Meeting in Alexdria, October 10th. Dr. L. Emmett Holt, Jr., of Johns Hopkins University Medical School will be the guest speaker, his subject being "The Utilization of Fats by Normal and Abnormal Infants." Reservations for the luncheon should be made in advance.

Dr. T. D. Jones is president of the Society and Dr. W. A. McGee, secretary. Both doctors are from Richmond.

Virginia Authors—Attention!

There will be an exhibit of books written by Virginia physicians on display in the building of the Richmond Academy of Medicine, October 22nd-27th. It is planned to have a section of the exhibit devoted to works by contemporaneous Virginia physicians.

Virginia physicians who have written books, whether on medical or other subjects, are requested to communicate with Dr. E. C. L. Miller, Librarian, Medical College of Virginia, Richmond.

The Seaboard Medical Association of Virginia and North Carolina

Will meet this year at Kinston, N. C., December 4th, 5th and 6th. Dr. Paul F. Whitaker, Kinston, is president, and Dr. Clarence Porter Jones, Newport News, Va., secretary. Governor John C. B. Ehringhaus, of North Carolina, will open the meeting with an address to the public. On the 6th there is to be a symposium on Diseases of the Kidney. This will include papers by two guests, Dr. C. C. Carpenter, of the Wake Forest Medical School, whose subject will be Pathology of the Kidney, and Dr. Manfred Call, Sr., Richmond, who will give a general resumé and speak on the Management of the Kidney Patient. The symposium will also include papers by the following members: Drs. Walter B. Martin and F. C. Rinker, Norfolk, Dr. DeWitt Kluttz, Washington, N. C., Wm. B. Kinlaw, Rocky Mount, N. C., and Jos. R. Latham, Newbern, N. C. Other invited guests who will present papers are Dr. James C. Masson, of Mayo Clinic, Rochester, Minn., on The Use of Living Sutures in the Repair of the More Difficult Abdominal Hernias; Dr. M. Pierce Rucker, Richmond, whose subject will be Obstetric Shock, and Dr. O. L. Miller, Charlotte, N. C., on Disability in the Low Back.

Secretary to Alumni Association, Medical College of Virginia.

Dr. Lewis E. Jarrett, superintendent of the hospital division of the Medical College of Virginia, has been elected secretary of the alumni association of the college and has entered upon his new duties. Dr. Jarrett's proximity to the alumni office in the institution should enable him to give considerable time to the work of the association.

Dr. Jarrett attended Washington and Lee University before entering the Medical College of Virginia, first as a student in the school of pharmacy. From this school he graduated in 1922 and became pharmacist for the college hospitals. Later he became assistant superintendent of the hospitals, graduated in the school of medicine, and since 1933 has been administrative head of the large volume of hospital work of the institution. He has spent a long period at the college, knows many of the alumni personally, is vitally interested in the work of the association, and will doubtless give a good account of himself as its secretary.

This work will require very active attention during the next few years, particularly because of the approaching Centennial of the institution in the spring of 1938.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons

Held their forty-seventh annual meeting at the Greenbrier Hotel, White Sulphur Springs, W. Va., September 6th-8th, under the presidency of Dr. William Wayne Babcock, of Philadelphia. This Association, which includes some of the most prominent specialists in the country, has a limited membership of 150. About sixty members were in attendance. The guest of honor at this meeting was Prof. Edwin Zweifel, of the University of Munich, Germany, who delivered the Joseph Price Oration, on "The Diagnosis of Carcinoma of the Uterus and Its Earliest Stages."

Dr. M. Pierce Rucker, Richmond, Va., succeeded to the presidency this year. Officers elected at this meeting are: President-elect, Dr. Louis E. Phaneuf, Boston; vice-president, Dr. William H. Weir, Cleveland; secretary, Dr. Arthur M. Mendenhall, Indianapolis; assistant secretary, Dr. James R. Bloss, Huntington, W. Va.; and treasurer, Dr. Lewis F. Smead, Toledo.

Dr. Walter J. Otis,

An alumnus of the Medical College of Virginia, now assistant professor in Clinical Neurology and Clinical Psychiatry, Tulane University Graduate School of Medicine, New Orleans, where he has made his home for a number of years, is to present a paper by invitation at the National Conference of Catholic Charities, which meets in Cincinnati, October 7th-10th. The title of Dr. Otis' paper is to be "Early Symptoms of Mental Hygiene Problems in Children." He is also on the program to discuss a paper on "Teacher-Child Relationship" which is to be presented by Dr. Ralph Bergen, of Milwaukee.

Dr. Charles P. Cake,

An alumnus of the University of Virginia, Department of Medicine, has opened offices at 1726 Eye Street, Northwest, Washington, D. C., and will limit his practice to tuberculosis and other diseases of the chest. Dr. Cake has done special work along this line, having been recently connected with the Metropolitan Life Insurance Company Sanatorium at Mount McGregor, N. Y.

Westward! Ho! To San Antonio!

November 13th-16th are the dates for the Southern Medical Association meeting to be held in San Antonio, Texas, under the presidency of Dr. Hugh Leslie Moore, Dallas, Texas, and an interesting program is in store for all who attend. Tuesday and Wednesday, the first two days, will be given over to General Clinical Sessions, to some of the Associations meeting conjointly and to several of the smaller sections. Thursday and Friday will be given over entirely to section meetings, and to organizations meeting conjointly.

San Antonio will offer entertainment features which will be of unique character and engaging interest—a type which they, as probably no other city in the nation, can so adequately extend.

The Association will also conduct an official all-expense post-meeting trip to Mexico.

Further information may be received from Mr. C. P. Loranz, Secretary-Manager, Empire Building, Birmingham, Ala.

Dr. Horsley Honored.

Dr. J. Shelton Horsley was elected President of the American Association for the Study of Neoplastic Diseases at its meeting held in Washington, D. C., September 6-8, 1934, succeeding Dr. Max Cutler, of Chicago. Dr. Charles F. Geschickter, Baltimore, was elected vice-president, and Drs. Janvier W. Lindsay and Eugene R. Whitmore, were re-elected treasurer and secretary, respectively.

Dr. Wright Clarkson, Petersburg, was chairman of the Symposium on Neoplastic Diseases of Bone, and Dr. Horsley was chairman of the Symposium on Neoplastic Diseases of the Gastro-Intestinal Tract. Other Virginians on the program were Dr. M. J. Payne, Staunton; Dr. S. W. Budd, Richmond; Dr. D. R. Murphy, University; Dr. Mary E. Roche, Norfolk, and Dr. Carrington Williams, Richmond.

Dr. Claude E. Simons,

Of the class of '30, Medical College of Virginia, who served last year as a resident in medicine in the Hospital Division of the Medical College of Virginia, Richmond, has located in Wilson, N. C., for general practice.

Northampton-Accomac Memorial Hospital.

Members of the Board of Trustees of the Northampton-Accomac Memorial Hospital at Nassawadox, Va., recently elected as follows: Dr. Rooker J. White, of Keller, to succeed the late Dr. S. S. Kellam, of Belle Haven; Dr. J. L. DeCormis, of Accomac, to succeed Dr. John W. Robertson, of Onancock; and Dr. W. J. Sturgis, of Nassawadox to succeed himself. Drs. White and DeCormis represent Accomac County Medical Society and Dr. Sturgis represents Northampton County Medical Society.

The American College of Surgeons

Is holding its 1934 annual Clinical Congress in Boston, October 15th-19th, under the presidency of Dr. William D. Haggard, of Nashville, Tenn. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, is director general.

Dr. Samuel H. Mirmelstein,

Class of '32, Medical College of Virginia, who recently completed an internship at Peoples Hos-

pital, Akron, Ohio, has located for general practice at 118 Twenty-sixth Street, Newport News, Va.

Dr. Frank D. Daniel,

Class of '32, University of Virginia, Department of Medicine, recently at Longacre, W. Va., has located in Charlottesville, Va., where he will be engaged in practice with his father, Dr. T. H. Daniel.

The Physicians' Journal Club of the Eastern Shore of Virginia

Met at Drummondtown Tavern, Accomac, Va., September 10, 1934. The subject for discussion was *Arachnidism.* Cases were reported as follows: Dr. D. S. Fisher, Parksley, Va., four; Dr. John Robertson, Onancock, one; Dr. J. L. DeCormis, Accomac, one; Dr. Ira Hurst, Parksley, one; Dr. B. N. Mears, Belle Haven, four; Dr. J. W. Jackson, Machipongo, three; Dr. E. Holland Trower, Eastville, one.

Officers for the coming year were elected as follows: President, Dr. J. F. Edmonds, Accomac; vice-president, Dr. W. Carey Henderson, Nassawadox, and secretary, Dr. John Robertson, Onancock.

W. CAREY HENDERSON,
Retiring Secretary.

News From the Medical College of Virginia.

The ninety-seventh session of the Medical College of Virginia opened September 12th. The enrollment this year is around seven hundred and twenty-five although official figures are not yet available.

The customary convocation was held at 12:00 noon September 12th in the Egyptian Building. The president welcomed the new students. Short talks were made by the president of the student body, the superintendent of the hospital division, the four deans, and the secretary-treasurer of the college.

The annual report for the out-patient department shows 65,154 patient visits for the session 1933-34. The largest number of patient visits was made to the surgery clinic, 34,702. In the general medicine clinic there were 24,541 patient vists, while the obstetrical clinic listed 2,844, and the clinic in pediatrics, 3,062.

Dr. Walter E. Vest, of the Chesapeake and Ohio Hospital, Huntington, W. Va., was a recent visitor to the college.

The newly installed air cooling system in the Memorial Hospital operating rooms proved most helpful to the staff during the summer months.

Dr. Lewis E. Jarrett, superintendent of the hospital division, attended the annual meeting of the American Hospital Association in Philadelphia, September 24th-28th. .

Dr. William B. Porter, professor of medicine, and Dr. I. A. Bigger, professor of surgery, attended the meeting of the Clinch Valley Medical Society at Norton, Va., September 29th. Both Drs. Bigger and Porter took part in the program for this meeting.

Attend Medical Meetings.

Drs. Thos. G. Hardy and J. P. Trent, Farmville, Va., attended the meeting of the Norfolk and Western Surgeons, held in Atlantic City, September 26th and 27th.

On October 12th and 13th, Drs. R. A. Moore and Thos. G. Hardy, of Farmville, will attend the Orthopedic Clinic at Duke University, Durham, N. C. The Clinic is to be conducted by Dr. Phil D. Wilson, of the Society for the Ruptured and Crippled of New York City.

Dr. Walter Reed to be Again Honored.

A marker will be erected at the University of Virginia on the home where Dr. Reed lived while a student there. Dr. Paul B. Barringer is sponsoring this plan to honor Dr. Reed, famous because of his discovery of the cause of yellow fever, as visitors making pilgrimages to the student rooms of Edgar Allen Poe and Woodrow Wilson on the University lawn often ask about Dr. Reed's room.

Dr. Harry M. Hayter,

Well known surgeon of Abingdon, Va., was injured while attending the horse show in Tazewell and the Southwest Virginia Fox Hunters' Association about the middle of September. His hunter fell while taking a hurdle and Dr. Hayter suffered a broken collar bone. He has heretofore been taking the lead in winning prizes.

Dr. William F. Hatcher,

Of the class of '29, Medical College of Virginia, who has recently been practicing at McDowell, W. Va., has received an appointment for twenty-one months on the Ophthalmic service at the New York Eye and Ear Infirmary and entered upon his duties there on October 1st.

President Roosevelt to Dedicate Hospital.

On October 19th, at 4:30 P. M., President Roosevelt will speak at the dedicatory exercises of the Veteran's Hospital in Roanoke, Va. His message will be broadcast by CBS and NBC networks. The hospital, which has been built by the Government at a cost of approximately $2,000,000, is for the care of mental cases.

Married.

Dr. Raymond L. Claterbaugh and Miss Louise H. Scruggs, both of Clifton Forge, Va., September 8th.

Dr. Linville Murrell Halloran, Beckley, W. Va., and Miss Frances Louise Williams, of Lexington, Va., but more recently of Beckley, August 31st. Dr. Halloran is an alumnus of the Medical College of Virginia.

Dr. Oscar Lee Hite, Richmond, and Miss Inez DeJarnette, South Boston, Va., September 22nd.

New Member of National Board.

Dr. James N. Baker, Montgomery, Ala., State Health officer of Alabama, has been appointed a member of the National Board of Medical Examiners for a term of six years, to succeed Dr. Waller S. Leathers, Nashville, Tenn., dean of the Vanderbilt University School of Medicine. Both of these doctors are alumni of the University of Virginia, Department of Medicine.

An Invitation.

The officers of the Kentucky State Medical Association have extended a very cordial invitation to the members of the Medical Society of Virginia to attend the sessions of their annual meeting at Harlan, Ky., October 1st-4th, and to take part in their discussions. Their House of Delegates meets on the first and the scientific sessions will be held on the next three days.

Dr. C. Howard, Glasgow, is president, and Dr. A. T. McCormack, Louisville, secretary.

Dr. John E. Gardner,

Roanoke, Va., spent the month of September at Harvard University, where he took postgraduate work in cardiology under Dr. Paul D. White.

Dr. E. Trible Gatewood,

Richmond, Va., recently returned home after attending the Haslinger Bronchoscopic Clinic in Vienna.

Dr. E. Pendleton Tompkins,

Lexington, Va., by invitation recently addressed the Goshen Chapter of the United Daughters of the Confederacy, his subject being "Intimate Aspects of Canal Boat Travel on the James River Canal."

Mayor of Pamplin.

Dr. F. H. Lukin, a regular practicing physician, was recently elected mayor of Pamplin, Va.

Quinine Formulary.

Merck and Company, Inc., Rahway, N. J., has recently compiled and published a booklet under the title of "Quinine Formulary." It contains the various uses of quinine alphabetically arranged, with illustrative prescriptions. Copies of the booklet have been sent 140,000 physicians and 45,000 pharmacists. If you failed to receive your copy, write for one.

The Inter-State Postgraduate Medical Association of North America.

The Philadelphia County Medical Society will be host to this Association at its meetings to be held in Philadelphia, November 5-9, 1934. Dr. George W. Crile, Cleveland, Ohio, is chairman of the Program Committee, and an intensive postgraduate course covering the various branches of medical science is to be provided for the medical profession of North America. The program has been arranged for the general practitioner as well as the specialist.

Full information with regard to the program may be secured from Dr. William B. Peck, Managing Director, Freeport, Ill.

Dr. Henry A. Hornthal,

Alexandria, Va., returned in September from his Naval Reserve cruise on the U. S. S. Relief, where he served for several weeks as surgeon. He states that this is the only hospital ship in the Navy, that it can accommodate over 500 patients, and is better equipped than many hospitals on land.

The Association of Military Surgeons

Will hold their forty-second Annual Convention at Field Medical School, U. S. Army, Carlisle, Pa., October 8th, 9th and 10th. The meetings will be of a practical nature demonstrating the latest Field Medical Equipment for the treatment of the sick and wounded and their evacuation from the field of battle, also field sanitary appliances.

The President, Major General H. L. Gilchrist, U. S. A., retired, extends a cordial invitation for any of our members to attend.

City Health Board of Fredericksburg.

At the regular meeting of the City Council of Fredericksburg, Va., early in September, Drs. Lee Cooke and E. R. Ware were elected as two members of the City Health Board.

Dr. W. B. Martin,

Norfolk, Va., by invitation, recently spoke on "Congestive Heart Failure" before the Northampton County Medical Society.

The Radiological Society of North America

Will hold its next annual meeting at Hotel Peabody, Memphis, Tenn., December 3-7, 1934. The medical profession is cordially invited to attend. Further information may be obtained by addressing the Secretary-Treasurer, Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y.

Dr. Pendleton S. Tompkins,

Who recently visited his parents, Dr. and Mrs. E. P. Tompkins in Lexington, Va., has returned to the University of Pennsylvania Hospital, Philadelphia, where he is assistant to Drs. Keene and Norris in the department of gynecology.

Dr. D. D. Willcox,

Petersburg, Va., who has been confined to his home by illness for the past twelve months, has resumed his practice of eye, ear, nose and throat diseases.

New Books Available to Virginia Doctors.

The Library of the Medical College of Virginia, Richmond, gives the following list of new books available to our members, the only charge being return postage:

American Academy of Political and Social Science—Medical Profession and the Public.
American Illustrated Medical Dictionary.
American Society for the Control of Cancer—Cancer Then and Now.
Annual Review of Biochemistry, Vo. 3, 1934:
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Obituary Record

Dr. Henry Watkins Anderson,

Beloved physician of Covington, Va., died September 4th, after a long illness due to heart disease. He was seventy-eight years of age and graduated from the former Baltimore Medical College in 1883. Dr. Anderson had practiced medicine in Alleghany County for over fifty years and had taken an active part in the civic life of Covington, having served as acting mayor, councilman and coroner. Dr. Anderson was a member of the Masonic Lodge of Covington and had been a member of the Medical Society of Virginia for forty years. His wife and two children survive him.

Dr. John Langhorne Moore,

Richmond, Va., died September 8th, at the age of seventy-one. He was a graduate of the University of Maryland, Department of Medicine, in 1886. Until recently Dr. Moore has served as medical rating specialist for the Veteran's Bureau in this city. His wife and three children survive him.

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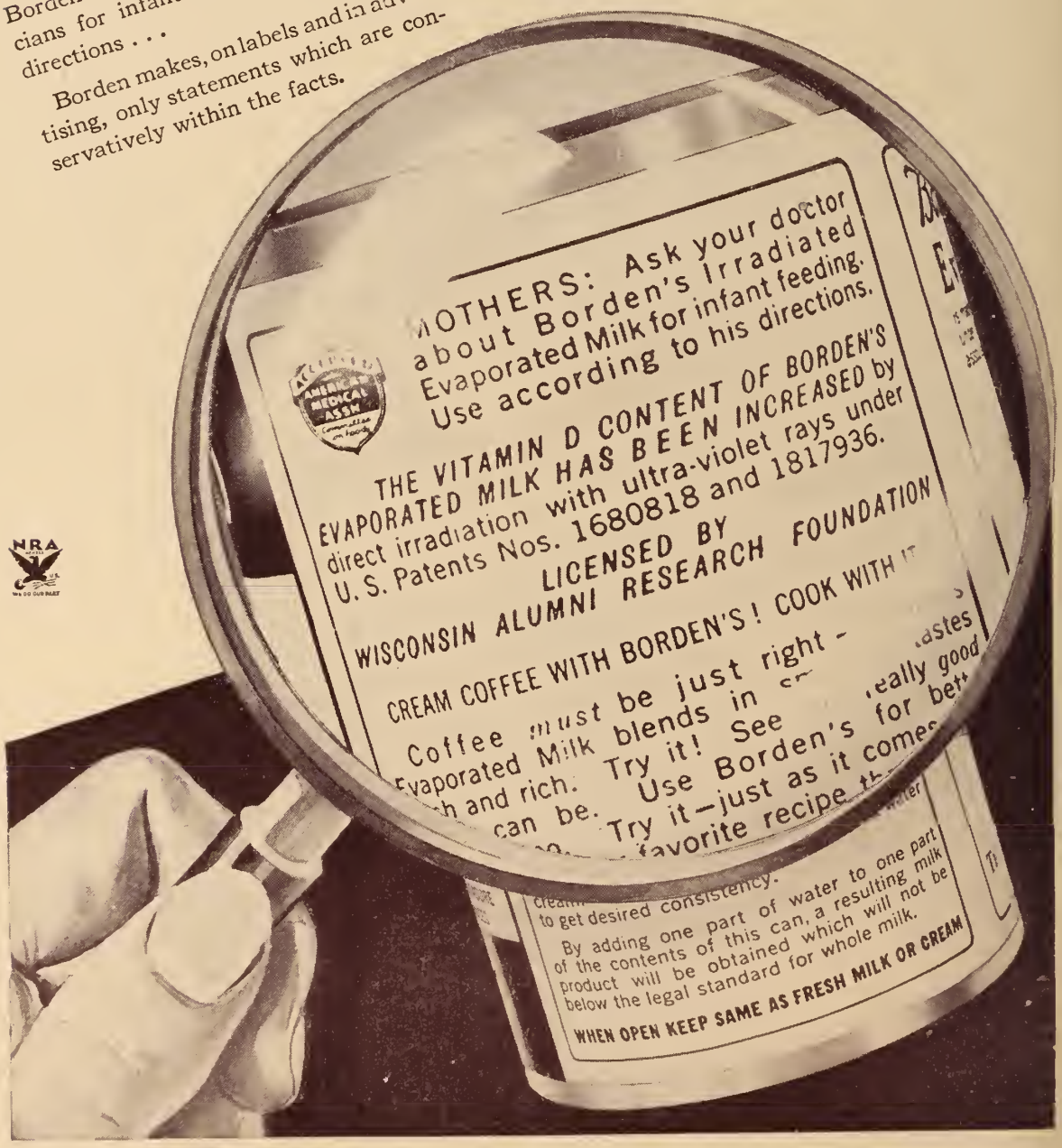
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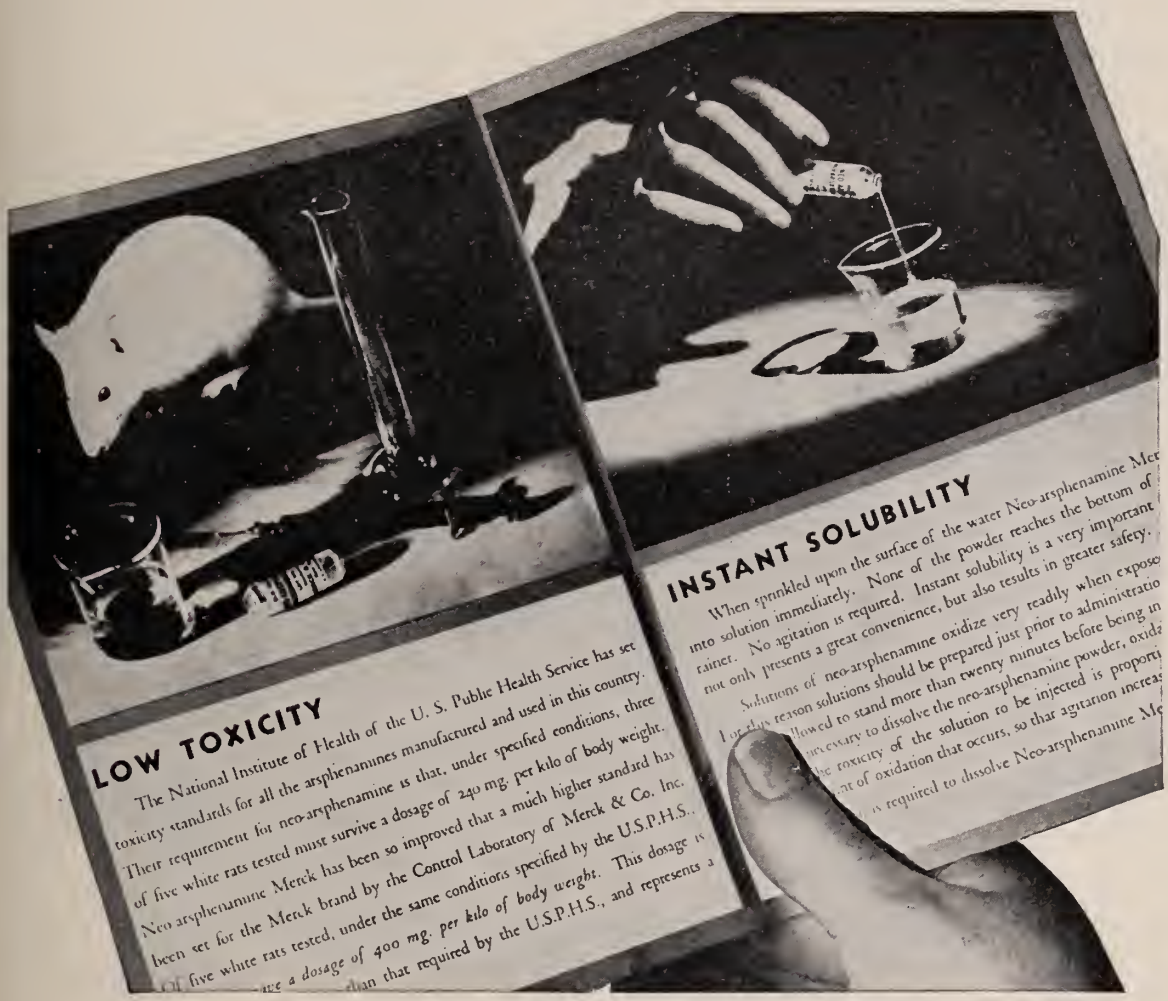
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MEDICINE AN ART AND A SCIENCE.*

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Newtown, Va.

Some one has said "Medicine is as old as the human race, as old as the necessity for removing disease." The medical man of the primtive day was the child of necessity. He relied entirely on his art which was based to a great extent on superstition and fallacy. There was no science; most of the good he accomplished was due to the faith with which he inspired his patients and, of course, to the strong medicine of nature. Nevertheless, his ministrations were seemingly helpful and he was credited with performing cures and even perhaps saving life. All the ancient civilizations contributed to and developed systems of medicine but, until the time of Hippocrates, medicine was in no sense a science. With Hippocrates the study of disease really began, and its separation from mysticism and religion were in some degree attained.

All the sciences have contributed their share to the development of medicine, and close observation of nature's laws as to health and disease, along with development of the basic sciences, have been the stepping stones upon which medicine as a science has been slowly built. Man is a complex creature, of a derivation both animal and psychic, with an inordinate thirst for knowledge. This desire for seeking after the unknown has brought man to his present state of mental development, yet there is much to learn and probably to forget also.

The physicians from Hippocrates down to the past century developed medicine more as an art than as a science; however, for the past hundred years the science has made rapid strides and at present has outstripped the art. Art may be defined as the skill and facility with which knowledge is applied to get results. Science is systematized knowledge which is demonstrable of proof. Science is the foundation stone of modern medicine and is as essential to the success of the modern practitioner as is heat and light to growth. The study of medicine is the study of a science, but its application to the treatment of the sick is an art, but an art which should be based on scientific knowledge. Art is just as essential a factor in treating the patient as are science and time in treating his disease. The science of medicine may be learned from books and in the laboratory, but the art of successful practice is not so learned. With some it seems to be to some extent a gift, but may be acquired by cultivation and experience and by association with those who possess it. It is apparently acquired more readily by those who are capable of inspiring their patients with hope. A man of mediocre scientific ability will sometimes outstrip one of far more scientific attainment by more skilfully applying what he knows, than does his more scientific competitor. There is need for cultivating the art as well as the science at the present time, if one expects to minister to the individual sick. It may do for those who expect to devote themselves to the laboratory to cultivate the science and neglect the art, but not so with those whose lives will be devoted to practice. The most successful physician will be the one who lays a good foundation based on scientific knowledge, and then acquires the art of skilfully applying that knowledge.

It appears that the methods of administering medical practice may be about to change, but it seems hard to believe other than that, for the average American family, the well-trained family physician will be the most acceptable method of receiving medical treatment, with the capable specialist and the well-equipped hospital for special treatment.

*Address of the President before the Sixty-fifth Annual Session of the Medical Society of Virginia, at Alexandria, October 9-11, 1934.

There are many physicians whose success would be far greater if they cultivated both the science and art of medicine as well. At this time there are many opportunities for those who have been in practice for a number of years to acquire the worthwhile advances that science has developed. With this knowledge of the present added to the experience of the past, a man who has been in practice has a powerful advantage. To the recent graduate, in whose mind the teachings of science are fresh, is given the opportunity of applying his knowledge by experience and good judgment. Thus youth and age both have their advantages. The medical man of the future will be the product of environmental changes, with the same general characteristics, it is to be hoped. He should be more competent because he will have more scientific ability, due to increased knowledge. If he intelligently uses this knowledge, he will be better able to care for those who are sick and, what is far better, to keep those who are well from getting sick. The span of life has already been lengthened greatly, owing to the increased longevity of those who formerly died in childhood from preventable disease, and those in adult life who died from infectious disease. Science has worked wonders here, but the death toll from arteriosclerosis with its degenerative sequelae and from malignant disease still challenge science and baffle the skill of the wisest, and will probably continue to do so. It may be cited that, owing to the fact science has taught how the life span of the race may be lengthened by means of its wonderful accomplishments in the fields of curative and preventive medicine, the lives of the mental and moral degenerate as well as the physical weakling are thus preserved to adult life, thereby tainting the heredity of the race and offsetting much of the good of environmental influences. It appears, therefore, that the study of scientific measures to correct this evil are necessary. This seems indicated when we consider the pernicious influence of a bad heredity on the future of the race. It does seem that further study of the science of eugenics, with a view of educating the public along this line, as well as some statutory application of this principle to the laws pertaining to marriage might help. At present the only measures of this type which are being carried out in this State are institutional in character. The law of the survival of the fittest has been nature's way of preserving racial integrity in the past, and, if science has in a way circumvented nature, it seems that science should at least endeavor to find some way, compatible with reason and justice, to prevent this condition—to some extent at least.

It may not be amiss to mention some of the epoch making advances made in scientific medicine and the names of those who have been instrumental in making these advances. Hippocrates stands out as the first great scientist. This man developed both the art and the science of medicine. He was a scientist because he divorced medicine from mysticism and religion and interpreted his observations by the rule of reason. He developed the art of bedside study of disease and was the first great clinician, and therefore deserves the name of the father of medicine. The veneration in which he held his profession and those who practiced it, as well as the consideration with which he regarded his patients, show the integrity of his character.

From the time of Hippocrates, medicine did not show any marked advances for many centuries. Galen, who lived in the second century A. D., was a great physician and was much sought after. He was a great writer on medical subjects and a great theorist. His teachings dominated medicine for more than a thousand years, and during that time no marked scientific advances were made. The success of Galen was doubtless due to his superior art and not to any great ability as a scientist. Later, many of his theories were found to be based on fallacy. Up to the period of the Renaissance medicine made no great advances. Paracelsus, who was born about 1490, was the first who was brave enough to break loose from the traditional fallacies of Galen and initiated a period of independent thought. He also introduced a number of useful chemicals into medical usage.

Vesalius, born in the sixteenth century, laid the foundation of anatomy as a science, and thereby deserves the place of one of the great lights in medicine.

Ambrose Pare, the French surgeon, who was the greatest surgeon of his period or of any period up to his day, completed the list of three, who did more up to that time to develop medicine as a science than any others had done since Hippocrates. Ambrose Pare acquired distinction by discarding the use of boiling oil in the treatment of gunshot wounds, and he also developed the operation of amputation by using the ligature to control hemorrhage. Before

his time, searing with a hot iron was the only means used for this purpose. He is also said to have been the first to use podalic version.

William Harvey, born in England about 1578, discovered the true method of the circulation of the blood, and thus founded the science of physiology. He also cleared up the physiology of the respiration. From this time on, medicine as a science developed more rapidly.

Sydenham, born in England in 1620, was called the English Hippocrates and was one of the great clinicians. He described many important diseases, and the disease, chorea, is still called Sydenham's chorea.

John Hunter, born in 1728, also an Englishman, was a great anatomist and made epochal developments in the realm of the surgery of blood vessels. He was one of the greatest investigators in the domain of physiology and pathology and the greatest surgeon up to his day.

The discovery of vaccination against smallpox by Edward Jenner, who lived about the time of Hunter, has probably done more for humanity by controlling this scourge, than any one thing done by one man in the history of medicine. Jenner not only worked out a successful plan to prevent this disease, which is the worse epidemic disease that ever invaded the colder climates, but his discovery paved the way for the development of the modern science of immunology.

The discovery that puerperal fever was contagious by Holmes in America and by Semmelweiss, of Vienna, and the protection of puerperal women by isolation and cleanliness, were great discoveries, but even modern asepsis and antisepsis seem unable to reduce the incidence of this disease as low as it should be, according to statistics.

Discovery of the anesthetics, ether and chloroform, the former by Long and Morton, Americans, the latter by Sir James Simpson, a Scotchman, along with the discovery of antisepsis by Lord Lister, have made possible the accomplishments of modern surgery.

Invention of the stethoscope by Laennec, a Frenchman, has probably contributed as much as any one thing to making diagnosis a science, and up to the discovery of the Roentgen ray, this was the greatest single aid to diagnosis of diseases of the chest.

Louis Pasteur and Robert Koch practically founded the modern science of bacteriology. Pasteur, a Frenchman, was not a physician, but a great scientist. He developed the inoculation method of treating those who had been bitten by animals infected with rabies, thereby preventing this terrible disease. Robert Koch, a German, was famed for his work on anthrax; then he discovered the tubercle bacillus; afterwards the spirillum of Asiatic cholera. Besides these, he discovered a number of the organisms responsible for wound infection. Koch was probably the greatest bacteriologist of all time.

In the year 1895, Wilhelm Konrad Von Roentgen discovered the ray which bears his name. From the standpoint of surgery as well as internal medicine, this has been of greatest value, inasmuch as in many conditions it has reduced diagnosis to a certainty. The application of this discovery to the problems of diagnosis, as well as its therapeutic value, has certainly been one of the greatest discoveries of modern times.

In 1905, Schaudinn, a Prussian, discovered the bacterial cause of syphilis. This was soon followed by Ehrlich's work in bio-chemistry, which resulted in the making of salvarsan, which is certainly a near specific for syphilis.

The discovery of the specific cause of diphtheria by Klebs and Löffler, and of the specific antitoxin by Behring, with the later development of toxin-antitoxin and toxoid, have practically given science control of this scourge of childhood. The isolation of the typhoid bacillus by Eberth, along with Widal's agglutination test and vaccination against this disease, together with modern sanitation, have materially controlled this almost universal infection.

The work of Walter Reed and his commission, along with the work of General Gorgas, has enabled the tropics and subtropics to banish the deadly menace of yellow fever.

It would not do to close this list of epoch-making achievements in scientific medicine without mentioning the discovery of insulin by Banting and Best. This is the most valuable of the contributions of organo-therapy to medicine, as it has given science a large degree of mastery over diabetes, a disease which before this was amenable to dietary control—and that only to a limited extent.

There are many other scientific achievements of almost or quite as much importance as those mentioned, and many great clinicians and scientists whose names are written high in the annals of medi-

cal history, but, on account of time, these cannot be mentioned here.

Now we come to the part that has been played by those of less transcendent genius, but nevertheless of almost as much importance, those who have made use of the great discoveries of science and have applied them to the prevention and cure of disease. In this class are the many physicians and surgeons who, through the ages, have used the art of medicine in applying the teachings of science in an effort to relieve human suffering, often risking their lives on the battle-field, in tenement houses of large cities, in the lonely hamlets of the countryside, in the hospitals and, in fact, wherever suffering and death have been known. To these, the unknown votaries of the healing art, should honor also be given. These, too, have done their part to unite the art and science of medicine and to weld them into a learned profession, whose proud heritage has been not only to succor and help the sick, but to protect the human race in time of peril and war from epidemics of disease and wounds and, when stricken, to help kindly nature heal when such is possible. In time of deadly peril, next to the Deity, the human race calls more on the medical profession for help than any other. From the first feeble wail of the helpless infant to the end of life, the doctor is called on for help and comfort. May the profession continue in its mission of applying science with the skill of art!

It is true that the ideals of society are changing, and in the process of evolution customs must necessarily change, but the same great impulses and passions sway the minds of human beings that have swayed them for centuries. The current of these superficial things does not, however, run deep in the minds of human beings as do the fundamental things on which life and society depend. So, let us hope that, however much we may change our surface markings and by what ever name we may call them, the profession of medicine may adhere, in principle at least, to the high ideals of that old Greek who was called the father of medicine and who formulated the highest code of ethics ever recorded, for which the profession of medicine should strive.

I close with this, the fervent wish of my heart, that the medical profession, with its high measure of achievement and accomplishment, paid for by thousands of lives devoted to study and effort and by grand and noble work done for humanity, may band together as one man for the good of the race and the honor of a noble profession, and may not sell its birthright for a mess of pottage.

SOME ARTERIAL DISORDERS OF THE BRAIN COMPLICATING GENERAL MEDICAL DISEASES.*

ALEXANDER G. BROWN, JR., M. D.,
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Stuart Circle Hospital

It is quite apparent that there is an intimate relationship between general medicine and disorders of the brain. This relationship is but the more emphasized as the advances of modern medicine unfold new findings in anatomy and physiology of the brain and the general body. Recent findings of neurologists and psychiatrists further draw attention to the relationship. In epilepsy[1] with its new therapy in diet and fluids, dementia paralytica with its treatment by induced fever, malaria or diathermy, and in endocrine disorders with its adjustment through internal medication of gland-feeding or injections, general medicine plays no insignificant part. Besides, in the mental disturbances that follow in the train of pneumonia, influenza, pregnancy, typhoid fever, acute cardiac disorders, anemias, food deficiency diseases, alcohol and drug-degenerations, and the like, etiologic explanations are found often in the general system. The therapeutic management of such mental disturbances is largely in the general medical treatment. Between the disorders of the arteries of the brain, particularly, and certain general diseases, one is quite able to affirm that there

*Read before the Stuart Circle Hospital Clinical Club, March, 1934.

exists a direct relationship. It is the purpose of this paper to draw attention to this relationship by sketching here some facts about the brain and its circulatory structures, and by describing several well-known and common general maladies that make serious inroads upon these blood vessels and, in consequence, create, in a general medical disease picture, striking, spectacular, and often mortal brain symptoms.

One must say, then, that the brain is necessarily an organ of first importance in general medicine. In spite of the fact that in recent years the brain has not received at the hands of internists, general physicians and general practitioners, the attention it deserves, it cannot be removed from a foremost place in the practice of internists and general practitioners as long as arteriosclerosis, nephritis, diabetes, syphilis, cardiac and such diseases so widely exist in the disease-population of the land.

The brain lies in the skull and weighs an average of forty-eight ounces in the male and forty-three and one-half ounces in the female. In its grand divisions of cerebrum, cerebellum and medulla oblongata, it lies there enveloped in its membranes. The cerebrum claims chief attention in this connection. It is the largest division of encephalon. It is ovoid and divided into hemispheres with a deep cleft or sylvian fissure in each side. The whole surface is divided into convolutions and fissures, demarking a frontal lobe, parietal lobe, occipital lobe, the temporo-sphenoidal lobe, and the various subdivisions in each. A continuous sheet of special gray matter envelops the white mass beneath and folds itself snugly in fissures and convolutions thereon. This is the cortex. Here is generated the high functions of the brain. Below is the white structure with its tracts, its corpus callosum, its caudate nucleus, its thalamus, its ventricles, its blood vessels, its cranial nerve-origins, and other structures.

The brain receives, through foramen in the skull, the blood vessels which bring the essential blood in order to supply adequate oxygenation to nerve cells of the central nervous system. A lack of oxygen quickly injures brain cells. On the floor of the skull the double origin of a continuous arterial system of the brain lies. The two vertebrals and the two internal carotids are practically, says Jackson, the anatomist, a common supply for all the arteries of the encephalon. That uique anastomosis at the base of the brain, known as the Circle of Willis, is brought about by interjunction of these four arteries. Jackson describes this blood supply of the brain succinctly: "The terminal or internal branches of the surface plexus derived from the posterior, middle and anterior cerebral arteries, are arranged into two groups: a ganglionic (nuclear) and a cortical group."

A. The ganglionic branches form four groups in each hemisphere. (1) Anteromedial group, from the anterior cerebral artery, supplies the head of the caudate nucleus, the septum pellucidum, the columns of the fornix and the lamina terminalis. (2) Anterolateral group, from the middle cerebral artery, pierces the anterior perforated substance in two sub-groups: (a) internal striate arteries, giving branches to globus pallidus of the lenticular nucleus and through the internal capsule terminate in caudate nucleus and thalamus; (b) external striate arteries, larger and more numerous, pass upward, between the external capsule and the putamen, and then through and around the upper part of the putamen into the internal capsule where they form two groups, the lenticulothalamic and the lenticulocaudate groups. The former terminates in the thalamus and the latter in caudate nucleus. On account of its larger size at its origin and its direct linear continuation with the internal carotid, emboli pass more frequently into the middle cerebral artery than into the anterior cerebral artery. One of the lenticulo-caudate arteries, which is longer and larger than the other and which is a direct branch from the middle cerebral artery, is called the "artery of cerebral hemorrhage" (Charcot). (3) Posteromedial group, from the posterior cerebral artery, supplies the floor of the third ventricle, the posterior part of the thalamus and the hypothalamic region. (4) Posterolateral group, from the central branches of the posterior cerebral artery, supplies the posterior part of the internal capsule, the pulvinar of the thalamus, the geniculate bodies, the corpora quadrigemina and their branchia, the pineal body and the cerebral peduncles.

B. The cortical group of the cerebral arteries passes into the cortical substance both from the summits of the gyri and from the walls of the sulci. They are short and pass at right angles into the gyri, and supply gray matter and white substance

beneath, penetrating the medullary portion of the brain. Such is an anatomical resumé of the general lay-out of blood vessels in the cerebrum.[2] Circulation in the other members of the encephalon is omitted, as not germane to this discussion.

If the general practitioner looks at a diagram of the brain for the main areas in the motor field, he notes that high in sulcus centralis of the cortex is found that of the leg (toes, ankle, knee and hip); next below, the body (shoulder, elbow, wrist, fingers and thumb); next below, neck, face, tongue and mouth (ear, eyelid, nose, closure of jaw, opening of jaw, vocal cords, mastication). There also is the visual region and the auditory region of the cortex, and the olfactory region of the cortex; each offers functions of extreme interest in general medicine. The sensory area lies in the cortex and must be studied through sensations of heat, cold, pain, skin touch, position, sight and smell. These serve as important aids in diagnosis of brain maladies as they appear in the sensory tract and cortex.

The intellect or mind is housed somewhere in the gray cells of the fore brain. Here resides consciousness; from here springs disordered thought or psychoses. It is here that man thinks and reasons or becomes mad; it is here that man fears, hates, loves, imagines, remembers, judges, aspires, defends, contrives, invents, gives honor and suffers dishonor, feels despondency, endures hardship, suffers humiliation. In other words, here in brain cells, exists man—and all that mankind stands for.

May we not say with Pope* of this mind-area of the brain, what he says of man in his "Essay on Man"!

"Know then thyself, presume not God to scan;
The proper study of mankind is man.
Placed on this isthmus of a middle state,
A being darkly wise, and rudely great:
With too much knowledge for the skeptic side,
With two much weakness for the stoic's pride,
He hangs between; in doubt to act, or rest;
In doubt to deem himself a God or beast;
In doubt his mind or body to prefer;
Born but to die, and reas'ning but to err;
Alike in ignorance, his reason such,
Whether he thinks too little or too much;
Chaos of thought and passion, all confused;
Still by himself abused, or disabused;
Created half to rise, and half to fall;
Great lord of all things, yet a prey to all;
Sole judge of truth, in endless error hurled,
The glory, jest, and riddle of the world."

*Pope: "Essay on Man."

Recent studies on the cerebral blood vessels have brought out interesting facts. For a long time it was held that vessels of the brain were end-arteries; much like the theory that the so-called end-arteries of the coronary system were lacking in anastomosis. But the work of Pfeifer and Cobb, cited by Sands,[3] shows that capillary blood supply of the cortex is an endless network and that there is a free anastomosis between the capillaries of both the surface and the depth of the brain. Sands further calls attention to Hassin's work in which the presence of nerve endings in the pial vessels was demonstrated, and to the work of Penfield in which the same sort of innervation of the intra-cerebral arteries was found. Besides it was noted that the two nerve plexuses are continuous. Sands further notes that Forbes and Wolf have "demonstrated that the nerve supply of the vessels of the brain is derived from the sympathetic system, and that stimulation of the vagus causes dilatation of the vessels, and stimulation of the sympathetic causes their constriction."

The lymphatic system of the brain also has a bearing on the physiology of the circulation. It has been found, but not without question by some, that there is the presence of the Virchow-Robin lymph spaces in the adventitial sheaths of the cerebral arteries. It is felt that this lymph system, under stress and strain of modern life and prolonged and arduous intellectual effort, carries a high content of brain effete-material and that irritation, constriction and even pathological effects are produced by this in the walls of these vessels and leads to degenerative and sclerotic changes.

Cerebro-spinal fluid[4] needs some comment and consideration in this connection, because it originates in the highly vascular choroid plexus. This fluid lies in lateral ventricles of the brain. This brain fluid, formed by this vascular structure, passes from the ventricles by way of the Sylvian aqueduct through the mid-brain to the fourth ventricle; then passes through a small aperture in the pia mater, which covers the fourth ventricle and reaches the cerebral cavity. The fluid passes through the thin membrane which separates the subarachnoid space from the venous sinuses and there enters the blood stream. If, perchance, the arachnoid villi become blocked and the choroid plexus becomes enlarged, intracranial pressure results.

The outlet of the spinal route of the fluid is

through the foramina of Magendie and Luschka. One may see the remote influence of sclerosis of the cerebral vessels here—more direct under the effect of blood clot in brain hemorrhage.

Cobb[5] has recently called attention to some interesting physiologic facts of the cerebral spinal fluid that seem worth noting here. This water jacket over and in the brain is subject to great and frequent changes of pressure under more or less normal conditions: in the prone position, the normal is about 150 mm. of water; in a sitting position, the pressure within the cerebral ventricles falls to minus 30 or 40 mm. of water, while in the lumbar sac it is 300 or 400, depending upon the length of cranio-vertebral canal. It is true, also, that intracranial venous pressure is practically always the same as the cerebro-spinal fluid pressure—rising and falling with it. One sees at once that, with this changing venous blood pressure, arterial capillary flow must pour in compensating amounts of oxygenated blood. Such varying demands, as controlled by the flexibility of the caliber of arterioles and a sustained head of pressure from the arteries is obtained through the conjoined network of the "Circle of Willis."

To repeat, cerebral vascular disease and disorders necessarily occupy a foremost place in general diseases. The function of the brain-centers depends upon the blood supply. Arterial degeneration and sclerosis is, we know, a common condition. In every walk of life and in the 5th to 7th decade arterial disease is to be found. Practitioners see on every hand in patients of this period of life the plain evidence of arterial disease. Sclerosis of the brain vessels is probably likely to produce symptoms of danger both to life and usefulness; sclerotic changes of the vessels of the heart in its coronary symptoms may be comparable to those of the brain in degree of danger to and usefulness of human life.

Cerebral arteriosclerosis may or may not participate fully with palpable or general arteriosclerosis. But the same general causes are known to be factors in both the general and cerebral arterial sclerosis. Factors outside of the brain produce the gradual sclerosis more often by far than not; factors in daily habits in food and drink, occurrence of infections far removed from the brain, disease of the kidneys, chronic diseases, such as diabetes, form a group of conditions that serve as etiologic factors in the production of cerebral arterial disease. These conditions may operate for years before symptoms of importance are ordinarily detectable in the brain. In the process of sclerosis large arteries chiefly may be involved; there may, however, be cases in which the small arteries predominate in the sclerotic change.

Symptomatic evidences of such changes in the brain are varied. Generally such patients complain of one or a group of the following symptoms: headache, queer feelings in the head, dizziness, nausea and vomiting, ringing in the ears, fullness in the head, a lack of power of concentration, visual disturbance, irritability, sleeplessness, despondency, unsteadiness of station and tremor, emotional unbalance, mental confusion, speech disorders and incomplete mental deterioration, and symptoms secondary to progressive vascular subcortical encephalitis. Cerebral hemorrhage or apoplexy may spectacularly occur. In such an evolutionary sclerotic change, and under the influence of high blood pressure, often a cerebral artery ruptures and hemorrhages. Such a hemorrhage may occur anywhere—in the cerebrum, pons, medulla, or cerebellum. But, most commonly, cerebral hemorrhage occurs. The blood, perchance, floods the lenticular nucleus and leaks its way into the internal capsule, and afterwards bursts in the cerebral ventricle. The classic Charcot's "artery of cerebral hemorrhage," the lenticulostriate artery, is at fault in 90 per cent of these cases.

The focal symptoms vary very much according to the location and quantity of blood and the compensating factors present at the time of and following the cerebral arterial rupture.

Rapid loss of consciousness may characterize the shock of hemorrhage. Coma, for a few hours, days or weeks, may follow. If the hemorrhage is of large proportions and if bleeding occurs into the ventricle, symptoms of intracranial pressure, such as disordered respiration, even Cheyne-Stokes' breathing, and increase of blood pressure, appear. Most common are the symptoms of hemiplegia; sometimes hemiplegia comes on at the time of hemorrhage or a short time thereafter, but in some circumstances of location and amount of bleeding this symptom may be delayed in appearing for some hours. Besides paralysis, temporary sensory disturbances, trophic changes, contractures, and aphasia (in right-

sided hemiplegia) may be noted. The points in connection with general disease and cerebral hemorrhage may be illustrated by a few cases:

Case One.—Mrs. G. (10697). Now living at the age of 81 years. A white woman, first seen 1915, diagnosed then as over-weight, chronic nephritis, high blood pressure (185 systolic). In 1925 had a cerebral hemorrhage; was unconscious for three weeks, more or less complete. Paralysis of left side. Gradual restoration of motor function was obtained.

Case Two.—Mrs. T. (10138). Now living at the age of 73 years A white woman, widowed. First records 1914. Diagnosed chronic nephritis (mild), without marked symptoms. Had an attack of hepatic colic (1914). Weight 126. Blood pressure 168 systolic; 1924 cerebral hemorrhage occurred; was able to walk from toilet room to bed: lapsed into unconsciousness, and remained more or less in this state for two weeks; paralysis of right arm and leg and aphasia. Now, after nine years, partial use of leg, arm and speech, result.

Case Three.—Mrs. D. (14625). Now living at age of 80 years. A white woman, first seen 1922, giving history of having had a slight stroke. Weight 185; systolic blood pressure 185; heart enlarged. Diagnosed overweight, arteriosclerosis, chronic nephritis, myocarditis. 1931 cerebral hemorrhage occurred; unconscious for three weeks. Paralysis of left side; gradual restoration of motor function. Present condition good, but on account of overweight restricted in movements.

Case Four.—Mr. W. (12594). Now living at age of 78 years. A white man, first record of blood pressure 200 systolic. Diagnosed; arteriosclerosis; marked vertigo with blood pressure 220 and 230 were noted. December, 1932, had cerebral hemorrhage; unconscious for some weeks. Paralysis of left side; gradual improvement; August, 1933, had second cerebral hemorrhage with unconsciousness and left hemiplegia. Now under care of nurse.

Case Five.—Mrs. W. (12541). Died August, 1933, at age of 70 years. A white woman, school teacher, first seen 1918; had blood pressure 180 systolic. Diagnosed arteriosclerosis, myocarditis. Weight 146. April and June, 1933, had cerebral hemorrhage; paralysis on left side, with stupor, coma, and death.

Case Six.—Mr. R. (16431). Died November, 1932. A white man, 72 years, guard at penitentiary, first seen November, 1930, on account of cholecystitis with pain and obstinate jaundice. Blood pressure was 180 systolic, and patient had an associated diabetes mellitus. Gall-bladder and diabetes were treated. Cerebral hemorrhage occurred November, 1932; in coma for twelve days before the end; left hemiplegia. This patient stated he felt a pain in right side of his head and got up from a chair and found that he could not use his left side and fell. He had experienced dizziness and ringing in ears many times.

Case Seven.—Mrs. K. (16701) S. C. H. Died April 23, 1933. A white woman aged 54 years. Seen in consultation with Dr. M. L. Anderson. Patient unconscious; blood pressure 260 systolic. Paralysis on right side. Blood-sugar records while in hospital 203, 362, 376 and 448, whereas in early part of hospitalization it was only 141. Diagnosis: Diabetes, chronic nephritis, arteriosclerosis, and hemorrhage of cerebral artery.

Cerebral thrombosis is a lesion not uncommon partictularly in cases of diabetes and syphilis. It may occur in cerebral embolism following some mild or severe systemic infection or chronic disease. Prodromal symptoms of this vascular lesion usually appear gradually, except in the instances of embolism. Common symptoms are headache, dizziness, numbness, tingling, muscular weakness, partial anesthesia, slowly growing more pronounced as occlusion becomes more complete in the cerebral vessel. Sensory disturbance may take precedence over the motor. Slow and progressive, the symptoms become more and more marked. The localization of the lesion in a spreading thrombosis of a large area makes interpretations difficult. The diagnosis between thrombosis and an infiltrating neoplasm taxes the best skill of neurologists. Special notice must be made of the two associated diseases to this condition. In cerebral syphilis evidence of thrombosis of vessels must be thought of: gradually effecting a paralysis, and dementia symptoms. In diabetes mellitus, with its long years of high blood sugar and its arteriosclerotic change, likewise, one must be not unmindful of a possible cerebral arterial thrombosis. This may appear in the form of indefinite sensory symptoms, such as numbness or pain, and later followed by motor and other cerebral

symptoms. Illustrative cases of thrombosis may be found in the history of two patients:

Case Eight.—Mrs. S. (15488). Died December 10, 1930. A white woman aged 63 years, weight 171; height 5 feet, 5 inches. Had consulted me at intervals during a period of four years. Blood pressure readings had been never excessive, but she showed the evidence of "full habit" and was a very nervous type. There was no evidence of gross arteriosclerosis; but there was discernible a marked "personality" of the strenuous type. On September 28, 1930, was called to her home in the country. Ten days before she had a sensation of numbness in the left hand, a sort of prickly feeling; also a like feeling in the left side of her face. Blood pressure was 160/105. There was no impairment of sensation in the lower extremities at this time, but in a few days numbness in left lower limb was felt. No motor signs had appeared.

On October 13, 1930, motor disturbance of left side of face and left hand was noted, growing progressively worse to complete left hemiplegia. This patient gradually grew worse, passing into a stupor, more or less deep, and finally into coma. Death occurred about eighty-four days after first feeling of numbness in the hand. Diagnostic vote by two interists and three neurologists was in favor of vascular thrombosis over brain tumor, although brain tumor was ever foremost in the minds of medical attendants. It was probably progressive thrombosis of a branch of the middle cerebral with cortical deterioration.

Case Nine.—Mr. B. (15666). A white man, aged 63 years. When first seen September, 1926, he weighed 162 pounds, blood pressure was 140/80, with sugar in the urine, and blood sugar 190 mgs. per 100 c.c. of blood. Died April 25, 1931. This patient was more or less continuously under observation for five years; while he obeyed dietary orders fairly well, he continued the use of a large daily amount of whisky. He was under constant treatment of insulin and diet. Late in March, 1931, gradual loss of motor function of right side of face and right arm was noted; besides impairment of speech, periods of stupor more or less deep were present. Blood sugar was 102 on admission to the hospital; blood sugar became 214 and shortly before his death was 444, and urea was 110. Diagnosis of diabetes, arteriosclerosis and chronic nephritis culminating in thrombosis of cerebral artery was made.

Cerebral embolus is a lesion of the cerebral "circulation," more or less frequently met with in medical practice. Doubtless quite a number of such cases come to mind as one reflects upon years of practice. Recalling the anatomical map of the cerebral circulation, one may understand the possible variableness of symptoms arising from such a lesion. Sudden occlusion of a vessel by a fragment from a distant area gives rise to dramatic symptoms. It may be a vegetation from an ulcerative heart valve or cardiac infarction following coronary thrombosis. One of the most striking causes is subacute bacterial endocarditis; in the course of this protracted malady one may experience paralysis, convulsions, attacks of unconsciousness, and death, following in the train of a cerebral embolus. Often emboli are small, usually so, and block small arteries; the damage may consequently be small, and there may be merely a monoplegia. However, there may be hemiplegia. There may be unconsciousness. Much of the damage of survivors is brought about by edema, incident to the blockage. As the edema of a region recedes, the symptoms may improve. Thrombosis may follow, however, in the distal branches and permanent and deteriorative damage ensue. Often the sensory signs are as marked as the motor. This is due to the fact that emboli, and the occlusive effect therefrom, effect the thalamus where sensory areas are found.

This clinical condition may be illustrated by the following case:

Case Ten.—Mr. W. (16098). Died January, 1929. A white man of 58 years, a lawyer. He had taken an active part in speaking campaign of Al Smith for President in the Fall of 1928. Suffered attack of coronary thrombosis, with anginal syndrome; and remained in hospital for several weeks. Blood pressure 148/82. Was transferred to his home by ambulance; remained at home for one week when suddenly had symptoms of loss of speech, numbness and loss of motion in right arm. Was transferred to hospital. Symptoms cleared up, and returned home in four weeks in ambulance. Recurrence of symptoms of embolic phenomena occurred in both legs and right arm; these were local to extremities. Diagnosis was cornary thrombosis,

infarction and embolic symptoms in cerebral arteries and arteries of extremities.

While aneurysm and hemorrhage from traumatism may rightfully be considered in connection with the subject under discussion, the purpose of the paper precludes going into these lesions. Likewise, venous hemorrhage with thrombosis may present lesions to be appropriately discussed, but as these enter frequently in the domain of trauma and infection they may be omitted here.

In conclusion, one may call attention, then, to the strategic clinical position of the practitioner as he observes the progress of such ambulatory patients. The physician may properly read into medical prognosis, in his own mind, in cases of high blood pressure and arteriosclerosis, in diabetes with arterial sclerosis, in nephritis, in syphilis and other conditions above mentioned, the rather great possibilities of cerebral arterial disease or disorders as ultimate and, often, terminal phenomena. With such a mental projection as a possible trend, one may feel that the medical mind does occupy a better clinical attitude that would, at least, forefend or delay the occurrence of such vascular eventualities.

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THE TREATMENT OF THE COMMON TYPES OF CHRONIC ARTHRITIS.

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The history of chronic arthritis goes as far back into remote epochs as that of any other disease. It has long been, and still is, with the exception of cardiovascular conditions, the chief cause of disability among chronic diseases. Nevertheless, up until two decades ago arthritis was a sort of stepchild of medicine. Few were interested in its study. It was not a topic for discussion at medical meetings and no one rejoiced in the opportunity of treating its victims. This attitude is illustrated by the statement attributed to Dr. Osler when he was asked how best to handle a case with chronic arthritis. He is said to have replied "when you see a chronic arthritic come in at the front door, climb the back fence."

A marked change, however, has occurred in the status of arthritis during the past twenty-five years. In part, this may have been due to the promulgation and development of the doctrine of focal infections, and, in part, to the development of community health studies and state medicine in European countries where our colleagues of the medical profession were not enthusiastic about the focal infections. Now in Europe there is an International League against Rheumatism with divisional sections in each country. The Congress sponsored by this League meets yearly in some important medical center. The British Medical Association appointed a committee to study the causation and treatment of arthritis and allied conditions. This committee made a full report of their studies, which was published in the *British Medical Journal,* June 17, 1933. There is also the American Committee for the Control of Rheumatism. This committee is now affiliated with the American Medical Association and holds its meetings in conjunction with the yearly meeting of the Association. Entirely apart from the work of these official bodies, medical literature is today full of articles discussing the pros and cons of numerous features in the etiology, pathogenesis, and the treatment of chronic arthritis, for, we must admit, we are really still in the dark as to the cause of this condition and therefore have no scientifically determined specific treatment for it.

TYPES TO BE DISCUSSED

In this discussion we shall not be concerned with

the acute arthritides nor with the specific types of chronic joint disease, such as those due definitely to sepsis, to the pneumococcus, to the tubercle bacillus, to the gonococcus, to the spirochaeta pallida, or to gout. We have left the great bulk of chronic non-specific arthritis that is met with in daily practice. It is customary to divide this great group into two types—*rheumatoid arthritis* and *osteoarthritis* (Garrod, 1907). Synonyms are atrophic arthritis and hypertrophic arthritis; chronic infectious arthritis and degenerative arthritis. In America we have more frequently used the terms chronic infectious arthritis or atrophic arthritis for that type occurring in younger people, and hypertrophic arthritis for that type occurring in older people, but there is a current tendency toward the more general adoption of the English terminology of rheumatoid arthritis for the younger and osteoarthritis for the older patients. Here we encounter the first definite controversy in this controversial subject. The original differentiation of the two types served a very helpful purpose in the study of the disease, and most observers still sharply distinguish them and really consider them distinct entities with different etiologies, the first due or related to infectious processes, and the second definitely a degenerative disease. There is recognition, however, of transitions between the two types, or of mixed cases, that show features belonging to both, so that there are not a few students of the disease who feel that no sharp differentiation between them is really possible and that the typical case of rheumatoid arthritis, on the one hand, and osteoarthritis, on the other, really belong to different extremes of the scale of variations in one and the same disease, the differences depending more upon the type of reaction of the patient than to any peculiarities of its etiology.

Briefly, the clinical features of rheumatoid arthritis are its occurrence in the younger age group, the acute onset in about half the cases, the frequent presence of fever of mild or moderate degree, the multiple joint involvement including that of the proximal interphalangeal joints, its apparent predilection for young people of the asthenic type with undernutrition, unstable nervous systems, liabiltiy to fatigue, and vulnerability to strain. Further, there occur clinical manifestations of acute or subacute inflammatory processes in the joints with swelling, heat and pain, changes in the blood formula that suggest infection, increase in the sedimentation rate of the red blood cells, and the very frequent association of chronic infectious foci in the upper respiratory tract or elsewhere.

On the other hand, osteoarthritis occurs in the older age group; it has as a rule an insidious onset, involves relatively few joints, chiefly the spine, the knees, the hips and the terminal interphalangeal joints in the form of Heberden's nodes. Its victims are more usually of the robust, plethoric, pyknic type with tendency to obesity. There are seldom acute manifestations. There are no changes in the blood formula and no acceleration as a rule of the sedimentation rate.

In rheumatoid arthritis the synovial membrane is primarily and chiefly involved, while in osteoarthritis the cartilaginous degeneration seems to be the essential factor, and this is followed by a proliferation of bone about the periphery of the joint so that there are more or less characteristic X-ray changes for each type. The tendency to bony ankylosis is marked in severe cases of rheumatoid arthritis while in osteoarthritis this rarely occurs.

ETIOLOGY

As with other chronic ailments, the *predisposing causes* of arthritis are important, and the same predisposing causes with some variations in emphasis are applicable to both of the common types of chronic arthritis. Many people harbor foci of infection; comparatively few of them have a chronic arthritis. The fertile prepared soil is as necessary as the seed in order to produce the crop of rheumatic pains, aches and disability.

It is not known to just how great an extent these predisposing factors are inherited, but there is an increasing belief that such factors play a large part in the predisposition to disease. A family history of arthritis is not at all unusual and the physical habitus or type of individual already mentioned in connection with arthritis is, of course, an inherited character.

Important environmental factors are exposure to cold and wet, trauma, fatigue and physical or mental shock. Fatigue and shock are, of course, important factors in any infection. Trauma is of particular importance in arthritis and may be of the most varied sort. Clinical symptoms may be precipitated by a single incident, such as an automobile wreck, or the traumata may be multiple, minute, re-

peated incidents, as, for example, in the weight-bearing joints of obese older patients.

One factor that has been receiving increasing attention is the *circulation of the affected part.* Certain clinical observations and experimental work are indicative of a defective circulation in the joints. The direct microscopic observation of human capillaries in the skin of the nail fold and the study of skin temperatures show that in at least half the patients with chronic arthritis the blood flow is demonstrably decreased. In the experimental work of tying off nutrient vessels it is found that joint changes can be so produced, and more easily produced in older than in younger subjects. The mechanism producing the poor circulation in rheumatoid arthritis affecting younger individuals is probably through the disturbed action of the autonomic nervous system, including the vasomotor nerves. We note the frequent occurrence of cold, cyanotic, damp hands and feet in these patients. In older patients with osteoarthritis there is also the tendency to arteriosclerotic changes and the diminution in the number of collateral channels, although the work of Keefer and his associates on the pathology of the disease did not reveal any very direct relationship between the degree of arteriosclerosis and the degree of joint involvement. The importance of the circulation is emphasized because of its bearing upon certain methods of therapy.

The *exciting cause* of rheumatoid arthritis is at the present time a matter of much debate. Practically all American observers are committed to the idea that the disease is an infection and the term chronic infectious arthritis is probably used more widely than the term rheumatoid arthritis. We are impressed also with the importance of focal infections as the gateways and primary sites of the disease. English workers are in accord with us on these points. Other European physicians are less enthusiastic. Acceptance of the doctrine of focal infections is increasing in Germany and making rather slower headway in France. So, from a world standpoint, it cannot be said even here that there is complete unanimity of opinion. If we accept the disease as an infection and ask what is the infecting agent, we encounter much confusion. Rosenow was a pioneer in attributing the disease to a streptococcus, a green streptococcus. Haden has partially confirmed his work, but most workers have not been able to duplicate his findings. Cecil, Nicholls and Stainsby described in a majority of their cases positive blood cultures and positive cultures from joints, revealing usually an attenuated hemolytic streptococcus. Here, again, other bacteriologists and clinicians, copying their technique as exactly as possible, cannot duplicate their results. Several workers find from 5 to 15 per cent positive blood cultures with the streptococcus in chronic arthritis. But an analysis of the routine blood cultures in the Mt. Sinai Hospital has shown that this percentage of positive streptococcus cultures occurs in the general clinic without regard to the presence or absence of arthritis. Other bacteriologists (e. g., Olitsky and Long) find such streptococci as frequent contaminants in bacteriological work with tissues. Many workers are unable to cultivate any organism from blood or joints of chronic arthritics. But the positive results enumerated and the frequent finding of streptococci in chronic foci of infection in association with arthritis have strengthened the wide-spread feeling among the profession in this country that a streptococcus of some type is the common bacterial invader in rheumatoid arthritis. This assumption is further strengthened by the presence in the blood of many arthritics of immune substances, agglutinins and precipitins for the streptococcus. But here also there are conflicting reports and differences of opinion. At best, the relationship of the streptococcus to chronic arthritis is still an assumption and is lacking in scientific demonstration.

When we come to a discussion of the pathogenesis, we appreciate further some of the absurdities of the situation, for, having just stated that we have no scientific proof that the streptococcus is the cause of chronic arthritis, we proceed to ask how does the streptococcus cause arthritis. This, again, is a matter of some interest in relation to certain methods of treatment. There are two general viewpoints: First, that joints are directly infected by the organism concerned, and, second, that the organism does not invade the joints, but that the arthritis constitutes a method of reaction on the part of the body toward the general infection, an allergic or hyperergic phenomenon, if you will. The connective tissues, including the joints, have become hypersensitive to this antigen by reason of the prolonged or repeated doses of the bacterial toxins.

Again, we have no scientific demonstration of the accuracy of either of these ideas. Many more bacteriologists have failed to demonstrate the organisms

in the joints than have succeeded. The allergic conception is the more recent one and is apparently growing in popularity, though it is strongly assailed by some immunologists who feel that allergic ideas in general are being carried too far in the explanation of human disease. The only bit of direct evidence for the allergic explanation lies in the occurrence of arthritic phenomena in serum disease, thus indicating that the joints can take part in general allergic situations. Certainly immunity reactions with the streptococcus cannot be accepted as scientific proof in view of the uncertainties of this relationship already outlined.

So we must admit that we really do not know the cause of rheumatoid arthritis nor the manner of its production, but many physicians suspect a streptococcus as the exciting agent and are intrigued by the idea that the arthritis itself is an allergic manifestation to the chronic infection.

TREATMENT

Rheumatoid Arthritis. In the treatment of any infectious disease one naturally these days attempts to use specific means in combating the invader, although we recognize the fact that with many infections the physician must by treating the patient aid nature in overcoming the malady. In the treatment of rheumatoid arthritis, or chronic infectious arthritis, the eradication of *focal infections* has occupied the center of the stage in this country for many years. This doctrine, as I have said, is increasing in popularity abroad. In our own country the experience of many years has somewhat tempered our enthusiasm. Very few, however, doubt the advisability of removing all easily accessible foci of infection in such cases, but we no longer expect an immediate and dramatic cure. There is a general feeling now that such dramatic results may be seen only in the relatively mild and early cases, and particularly in young people, and that the later in the course of the disease that such foci are attacked, the less favorable is the result obtained. One great besetting sin in our therapeutic management of chronic ailments is our tendency to limit our efforts to one therapeutic approach. For a long time it was so with the removal of focal infections. Instead of beginning there, the treatment both began and ended there. Now one gets the impression that the center of interest is passing from focal infections to become concentrated upon the use of *vaccines.* Whatever may be one's impression of the value of vaccines in chronic arthritis, there is the same lamentable trend of depending entirely upon such a therapeutic measure over periods of weeks and of months to the neglect of all others.

In regard to the use of vaccines in general, from the standpoint of prophylaxis they have been of great value to medicine. Therapeutically they have proven notoriously ineffective. In controvention of this statement one might cite the value of vaccines in the treatment of boils, but even here one is interested chiefly in preventing the recurrence of boils rather than in the treatment of those already present.

We have passed in review the chaotic state of our knowledge regarding the association of streptococci or other organisms with chronic arthritis and we can therefore understand the point of view of the Council on Pharmacy and Chemistry of the American Medical Association in denying to vaccines for use in arthritis a place in New and Non-official Remedies. Nevertheless, they are very widely used in this country and in England where the British Committee for the Study of Rheumatism recommends them. The foremost students of the disease in America are becoming more and more lukewarm in their attitude toward vaccines and few prominent advocates of their use remain. Some cases of arthritis have, of course, responded favorably to the use of vaccines as they have to any other form of therapy. Many sceptical physicians have used them with the attitude that they are unwilling to omit in such a disease any possibly favorable influence. With such a point of view we must, of course, be particularly careful that the treatment does no harm.

If one can convince oneself that the manifestations of arthritis are allergic phenomena incident to chronic or repeated infections with streptococci or other similar organisms and if one can feel that he can demonstrate the antigen to which the tissues are hypersensitive, then the use of such a bacterial antigen in the form of a vaccine for the purpose of desensitization attains a theoretically favorable position. This is a favorite point of view just now and efforts are made to determine the proper antigen by means of intradermal tests, as in the study of pollens in hay fever. The vaccines are usually now given intravenously, and the dosage advised varies greatly with different authors with a tendency toward smaller and smaller doses. There

is unanimity of opinion that the dose should not be large enough to give a general reaction and that the focal reaction in the joints should be mild. Initial doses advised vary from less than a hundred organisms up to five million, the dosage gradually increasing with succeeding injections every five days to a week. Such treatments are continued for several months. Many observers note the favorable psychic effect upon the patient with the regularity of treatment, the sterile precautions, the intravenous injections and perhaps the local response on the part of the diseased tissue. Such psychic effect in chronic diseases is not to be minimized. Let me here emphasize again the point that whatever efforts we may make toward specific treatment in chronic arthritis, such efforts should be the beginning and not the end of treatment.

The use of *foreign proteins* intravenously in the treatment of rheumatoid arthritis is sometimes associated in our minds with the use of specific vaccines, although the mechanism of their effects is probably quite different. Killed cultures of typhoid bacilli (typhoid vaccine) and proteoses have usually been chosen as the foreign proteins. With the former the initial injection is from twenty-five to fifty million organisms and the injection is followed by chill and fever and considerable discomfort for a number of hours. While many patients have been benefited by this procedure, the improvement is rather short lived compared to the discomfort and even the danger of the method, so that it seems to be becoming less and less popular. The mode of its action is probably in part at least related to that in the treatment of peripheral vascular disease. In connection with such cases it has been demonstrated that foreign protein shock and also other types of fever and anesthesia produce a change of tone in the autonomic nervous system, including the vasomotor nerves, resulting in peripheral vasodilatation and an increased flow of blood. This effect in chronic arthritis is closely akin to what we try to accomplish by methods of physical therapy. Rowntree and Adson have utilized an even more dramatic method for producing this result by operations upon the sympathetic nervous system. After ganglionectomy and ramisection, they have described some remarkably favorable results in carefully selected cases.

Rest. During the acute stages of the disease and when there are manifestations of acute inflammation in any joint, the joint and usually the patient as a whole must have *rest,* rest from physical exertion, from physical trauma and from emotional disturbances as far as this is practicable under the existing circumstances. The physician must use his ingenuity in determining how best to secure rest for the affected joint. Sometimes a light cast or splint is advisable, or some special arrangement of pillows, and the joint should be held in the most favorable position with the possibility of contractures and unfavorable deformities in mind. One must be careful, however, that immobilizing apparatus be not allowed to remain in operation too long, for there is always the spectre of bony ankylosis in the background. As soon as the acute features are over, active movement of the joint should be instituted within the range that does not cause severe pain and that is not associated with any return of acute inflammation. After the acute phase has quite subsided the principle of rest for weight-bearing joints must be kept in mind, although other forms of exercises for these joints may be gradually increased.

In *pharmacotherapy* we have no specific for the treatment of rheumatoid arthritis. The most valuable drugs are mild sedatives and analgesics for their aid in securing rest and in relieving pain. Of the former, one may use short courses of bromides alternating with short courses of barbiturates. Of the latter, aspirin and pyramidon may be used. Cinchophen and neo-cinchophen have their advocates, but these drugs are somewhat in disrepute at present. While one does not expect to see the dramatic results by the administration of salicylates in rheumatoid arthritis that one sees often in rheumatic fever, nevertheless they do have an analgesic effect.

There may be indications, of course, for the use of other drugs in the treatment of any given case as determined by the general diagnostic study. Constipation may require them. Anemia should be appropriately treated and metabolic faults may suggest the use of arsenic or of thyroid products. General tonics are frequently found to be advisable.

Many drugs have been advocated in the treatment of chronic arthritis. They come, have their day, and go. Iodides retain some of their popularity. Sulphur compounds have recently had a

certain vogue. Forestier and other French writers describe good results from the intravenous use of gold salts.

The *diet* in rheumatoid arthritis is another controversial field. Perhaps in no other branch of therapeutics are there so many differences of opinion and so many fads among physicians as in regard to diet, a fact that is often very confusing and perplexing to patients who are only too prone themselves to the development of dietary fads. It would seem much wiser to take the stand that diets should never be restricted unless there are very strong and very definite reasons therefor, as for example, in diabetes mellitus, in gout or in obesity. Pemberton, long a faithful student of this disease, recommends a restricted diet with the minimal protein requirement, most of the calories in the form of fat, with abundant vitamines, but with markedly reduced carbohydrates. He is of the opinion that a general restriction in the diet in itself brings about some metabolic change that is favorable to the patient with chronic arthritis. Fletcher advocates a special diet including low carbohydrates and high vitamin content based on the analogy of certain lesions that he finds in the colons of patients with arthritis to those described in rats suffering from nutritional diseases. The general consensus of opinion, however, is that there is no specific diet for arthritis, and that the patient should be fed according to the state of his nutrition and perhaps other metabolic features disclosed in the course of his examination. It may be urged that undernourished patients be given high calory diets with the use, if necessary, of insulin, beginning with small doses and increasing to ten units one-half hour before the two principal meals of the day. On the other hand, obese patients should by all means be reduced by a diet as strict as is necessary, not only to improve the state of their nutrition but to reduce the repeated traumata to the weigh-bearing joints.

Transfusion of Blood. In arthritic patients with anemia very marked improvement may often be noted after repeated transfusions.

It is an interesting fact that in meetings like those of the American Committee for the Control of Rheumatism, there may be marked controversies over certain points in regard to focal infections or vaccine therapy or dietotherapy, yet all the speakers will unite in advocating at some stage of the disease the use of *physical therapy*. Still it is my impression that this valuable, indeed indispensable method in the treatment of chronic arthritis, is very widely neglected. It is a very old and was a very honorable type of therapy, but so great has been our neglect of it that it has become the stronghold of irregular cults, and we are now engaged in the effort to bring it back into the fold where it belongs. The Council on Physical Therapy of the American Medical Association has published a small handbook and will, I believe, produce a second edition of this work this fall. All who are interested will find it quite helpful and useful. In its column in the *Journal,* reports of the Council frequently appear with the description of some piece of apparatus or with the recommendation of some method of treatment.

Physical therapy is valuable in the treatment of arthritis chiefly in the later rehabilitation stage. One attempts first to remove or treat foci of infection, and by rest and other measures to allay the active inflammatory processes, and later by physical means to restore the joints and muscles to a more satisfactory anatomical and functional state. Certain physical measures, however, may often be used to advantage in the early stages of the disease.

The particular physical methods that are of value in chronic arthritis are: the applications of heat, of massage, and the judicious use of rest and of exercise. As we have already said, the acutely inflamed joints should be placed at complete rest and such already hot, swollen, tender joints do not bear well the application of additional heat. But with the subsiding of the acute phase do not leave the joint too long at rest, and do not postpone too long the use of physical measures. It is not necessary to have an elaborate and expensive set-up in order to utilize physical therapeutic measures in the treatment of these cases, although, naturally enough, more may be expected of a skilled technician than of a poor or inexperienced one.

Heat may be applied in many different ways, and methods for its application may be devised in almost any home. Hot water is usually available and arm baths or foot baths can be extemporized from the usual household equipment. A common electrical heater with a reflector is a satisfactory means of utilizing infra red rays. Electric lamps, electric pads, or, in the absence of electricity, hot water bottles, hot compresses and either local or general

warm baths are valuable. The degree of heat need not be great; indeed, it is often well that it should not be, but there is little point in utilizing heat once a day or three times a week in the doctor's office; provision should be made between visits for the more frequent and prolonged use of this valuable agent. It may be used at least three times a day for increasing periods of time, for fifteen minutes to half an hour, or longer. The parts, of course, should be carefully protected from rapid cooling after these treatments.

Local heat induces a dilatation of the blood vessels, an increased flow of blood and exudation of lymph, and in this way loosens the tissues and puts them in more favorable condition for the use of massage or of active and passive movements.

A favorite method for the application of heat at present is the use of diathermy, in which the heat is generated within the tissues, and presumably the joints and muscles themselves are more directly influenced. Although there is no striking rise of temperature as measured by the thermometer, the heat is generated within the tissues and dissipated by the increased flow of blood which is of course one of the body's protective mechanisms against external forces. Diathermy, however, is not a particularly favorable means of heat as a precursor to massage and exercise and, if it is used, it may well be followed by a brief period of rest and then by another type of heat before the massage or exercise is begun. Regardless of what types of heat are used during the day, it will often be found helpful to have the patient take a warm tub bath immediately before retiring for the night; the water should be comfortably warm and he should lie in the water for fifteen or twenty minutes; this is soothing and relaxing to the joints and muscles and is conducive to sleep. One must be careful to avoid prolonged hot baths that debilitate or weaken the patient.

By means of massage the muscle tone is improved, muscular atrophy is combated, the local circulation is increased and the flow of lymph is accelerated with aid in the removal of waste products. As long as there is any pain or tenderness in the joints, massage should not be applied to the joint itself but to the adjacent tissues. It is important that the massage be not sufficiently deep or strenuous to move the joint in any way. Massage should always be performed in even, smooth strokes, and when on the extremities in the direction toward the heart. The patient should be lying down, thoroughly relaxed, with the part to be treated on a level with the heart. Massage is begun in the proximal portion of the limb, and at first should be very light and of short duration. If a trained technician is not available the physican can show some member of the family how the procedure should be carried out. It is important to emphasize that massage may be overdone, particularly in weak, debilitated, or in old persons.

The importance of rest has already been emphasized. When acute manifestations have subsided exercise should be begun, but passive exercises had best be avoided except at the hands of trained and skilled technicians. It is much safer to encourage the patient to use active exercises of the parts without weight bearing, of course, and within the limits of reasonable comfort. Exercise can best be utilized immediately after heating.

Orthopedic Treatment. In chronic progressive cases do not delay too long the calling in of the orthopedic surgeon to assist you. He may do much to prevent ankylosis, the worst type of contractures, and earlier in the disease his aid may be valuable in the correction in feet, knees, hips, and spine, of static defects that throw additional strain with repeated traumata upon the weight-bearing joints. In this field he may be particularly helpful in the osteoarthritis of later life.

OSTEOARTHRITIS

Most of what has been said in regard to the treatment of rheumatoid arthritis may be applied also to that of osteoarthritis with the modifications that would naturally occur in any well individualized therapy. Indeed, many students of the disease do not attempt an accurate differentiation between the types for therapeutic purposes, but, treating each case upon its own merits, are willing from the therapeutic standpoint to regard them as of the same general nature.

This type, as we have said, occurs usually in older people, is of insidious onset, and usually lacking in the more acute manifestations. If easily accessible foci of infection are present, they should, on general principles, be eradicated. One does not usually expect dramatic results. Vaccines are rarely used. The utilization of rest, drugs, physical therapy, orthopedic methods are quite similar to those in rheumatoid arthritis.

Directions concerning the diet in osteoarthritis again vary greatly. As many of these patients are obese or at least show some degree of over-nutrition, it is important that the diet be of low caloric value until there has been a sufficient weight loss. Reports of metabolic findings in this type of arthritis, as in the other, are quite varied and suggest that various findings of retarded basal metabolic rate, changes in sugar tolerance or in purin excretion are related to other factors in that particular person and not directly to the presence of the arthritis. If the diet is to be further regulated it should be done with the findings in the individual patient as a guide. Quite commonly citrous fruits, tomatoes, and certain other usually healthful foods, are forbidden on purely empirical grounds.

In the treatment of chronic diseases like these we have been considering the wise physician will never forget the value of psychotherapy. Often the most valuable contribution he can make to the patient's welfare and comfort will come through this means, by teaching him how to live courageously, how to face realities serenely, how best to circumvent his liabilities and to make the most of his assets. In this connection occupational therapy and training may be of great assistance.

In *summary,* we may say that, in spite of the lack of scientific proof, there is a wide-spread impression that rheumatoid arthritis is closely related to streptococcus infection and specific methods of treatment are attempted in the eradication of focal infections and in the use of vaccines.

Each case should be studied as thoroughly and as comprehensively as may be possible under the circumstances. Each discovered abnormality should be listed in the diagnostic summary and should be taken into account in the further outline of the treatment, including dietotherapy, pharmacotherapy, physical therapy and psychotherapy.

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TREATMENT OF PNEUMONIA WITH SERA AND IMMUNOGENS—CASE REPORTS.*

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It is my intention to cover this subject very briefly and with no more words than necessary to my individual vocabulary. I pose not as a scholar or pioneer, but, in following others, I have been led to report these few cases, because, to me, they have been both encouraging and cheering in several cases of pneumonia of severe involvement and poor physical resistive forces.

Case 1.—P. B. J., male, aged 65, convalescent from a Pott's fracture and three weeks' pneumonia, was seized with lobar pneumonia six weeks after the advent of the first attack. Temperature 104.2 F.; pulse fibrillating, thready, rate 120; respiration 30 (plus); cyanotic, exhausted; alarmed; family terrified because of my colleague's prognosis; right lung half solid.

I did not take time for the dermal test, but immediately warmed and gave 20 c.c. of National Drug Company's Type I, II, III, refined pneumonia serum intravenously and 1 c.c. Parke-Davis' pneumonia immunogen deep in the Deltoid. Digitalis, caffeine and coramine were given to support the heart; also ¼ gr. morphia.

In less than one-half hour Mr. J. had a severe chill lasting twenty-five minutes. I gave him 7 m. adrenalin for fear that the chill might be anaphylactic shock.

In twelve hours the patient was improved, breathing easily, with temperature down to 100.8 F. In twenty-four hours temperature was 99.5 F., pulse 90, respiration 20. Lung involvement no less and not modified. Immunogen given second time.

I came prepared to administer another 20 c.c. of the serum, but waited because of his marked improvement. In forty-eight hours he was normal in temperature, pulse 84, respiration 18, lung clearing up rapidly. Four days after the serum his lung was clear and his recovery speeding. This will be two years in June, and he remains well.

Case 2.—Male, aged 43. Involvement of both lungs—lower and middle lobes of the right, and lower total and bottom margin of the upper left. Condition was quite as critical as above case, and duration was then of six days. Cyanosis was marked and patient unconscious.

Twenty cubic centimeters of National Drug Co.'s refined serum was administered intravenously. Patient had a slight chill. Because of the distance I did not see him again for twenty-four hours. He was then improved in respiration, had no great cyanosis; temperature about 100 F.; pulse 90. Another 20 c.c. was given—with no reaction.

In forty-eight hours the lungs, which for the first thirty-six hours were still solidified, were markedly improved as to extent of involvement and intensity. Temperature was from 99 to 99.5 F.; pulse 84, respiration 22 to 24.

Two days later I called again and found the patient cheerful, smiling, lungs clear, temperature normal, pulse 80, and respiration 18. Very weak, but with a fair color. Recovery was uneventful and he is now about his normal work as farmer and sawmill boilerman.

On my first visit as consultant the case looked done for, and it seemed as if he must die in a few hours. I was tempted not to administer the serum as I felt that it would be folly to waste the twelve dollars which the medicine cost.

Case 3.—Mrs. Kate C., widow of Dr. A. B. C., aged 68 years. Mrs. C. had previously had three strokes of apoplexy. For two years her blood pressure had jumped between 220 and 280. She had a very bad myocarditis with frequent attacks of cardiac asthma. She also had nephritis and pyelitis, and was possessed of a large ovarian tumor probably containing six quarts of fluid. Naturally her digestion was poor.

The day following last Thanksgiving I had the task of informing her of the death of her brother upon whom she leaned almost as daughter to father. Seven hours later I was called back to her home and informed that "she had a heart attack and was burning up." My colleague in Narrows had just left and had pronounced her case as broncho-pneumonia. This diagnosis was concurred in by me. By midnight she had developed bi-lateral lobar

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pnemonia and I was tempted to phone her relatives to defer her brother's burial a day, that they who had been so close in life might be not even separated in death.

At daybreak she was still alive, to our wonderment! She had all of the contrary symptoms of a fatal pneumonia, complicated by the above entities and cycles.

During the night the nurse had administered in the muscles all types of stimulants procurable in our locality. She was not, however, given oxygen.

At 9 A. M., I gave her morphia gr. ¼, and then 20 c.c. of the pneumonia serum, types I, II, III, plus ½ c.c. of immunogen. Immediately after the intravenous she was given six drops of adrenalin despite her hypertension. These doses were repeated in two days, three doses of the serum being given. Each dose caused her temperature to go lower until on the fifth day it was normal, with a fair pulse and respiration. Her lungs became clear, with the possible exception of fluid in the extreme dependent part of her chest cavity. Her bronchial tubes continued somewhat musical.

Despite our elation, on the seventh day she had a relapse, likely from stasis, due to her impaired circulation. This developed rapidly into a fresh lobar involvement. The serum was administered on three other occasions, from twenty-four to thirty-six hours apart. On the ninth day she again breathed easily, or as easy as was her custom. Her temperature dropped to less than 100 F., and we almost began to entertain hopes. However, she became worse on the night of the ninth day and died on the morning of the twelfth day.

I feel that she would have died in two or three days without the serum, and I consider this case remarkable because of the terrible condition she maintained physically, daily, and because of the fact that she threw off one attack of pneumonia in six days and looked somewhat as if she might overcome the second seizure.

Case 4.—J. W., a boy of 14, who resembled the proverbial "Lily of the Valley" after three months of whooping cough. Right lung was three-fourths solid. National Drug serum given second day. Chill lasting ten minutes was followed by near collapse. In twenty-four hours he was improved. In four days the lung was clear. Recovered rapidly, and now, five weeks later, is doing a few chores on the farm.

Case 5.—A. H., aged 38 next July. This man was an ex-patient at Oteen. Had been drinking one quart of corn whiskey daily for six months. Became ill on March 1st. I saw him with pleurisy on March 2nd. On the 4th he contracted pneumonia in right lower lobe. Temperature 105 F., cyanotic, respiration 32, pulse 120-130. Became delirious that afternoon. Delirium tremens followed closely that night.

National Drug Company's serum was administered at 11 P. M. Whiskey given every two hours. Stimulants, morphia and digitalis were given by hypodermic. Ortal sodium q. s.

The cyanosis was still marked twenty-four hours after the serum was given. Delirium tremens was under control. Still unconscious, but pulse, respiration and temperature showed improvement. Solidification was undiminished.

Two days later a second dose of the serum was contemplated, but, on seeing the patient, I found him with a temperature of 100 to 101, color good, pulse fair and only 84, respiration 20 or 22. Lung was rapidly improving by lysis.

Five days after the administration of the serum, the patient had no penumonia and was normal in pulse, temperature and respiration.

He is still spending more than half of his day in bed, but is making a very satisfactory recovery and will probably not of necessity return to Oteen.

As to the sera, they are only useful in the lobar type of pneumonia and are of types I, II, and III combined, National Drug Company.

The immunogens are used by me in every case of bronchial pneumonia. They are also used as a prophylaxsis against pneumonia, as well as in acute bronchitis and severe coryza. I have used these immunogens in every case for better than two years and have not lost a case of bronchial pneumonia. Most of the cases in children have shown rapid improvement and some have been terminated in twenty-four to seventy-two hours. At least I am either optimistic or foolish enough to lay the improvement in bronchial pneumonia largely to the P. D. immunogens. I can say positively that the cases have been shortened in duration and tempered in severity.

May I thank you for your kind attention in listening to my attempt to stress these things, I consider real advances in treating this arch enemy, the Reaper, bronchial and lobar pneumonia.

THE CLASSIFICATION AND ETIOLOGY OF HEART DISEASE.*

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Preliminary classification of causes and etiological types of heart disease has been attempted in various sections but the work is only begun. It is only from accurate knowledge of etiological factors of disease that we can concentrate our efforts to the eradication of these diseases.

For purposes of discussion in this symposium on heart disease, I have elected to classify heart disease into diseases of the pericardium, myocardium, endocardium and the coronary system.

Any satisfactory classification of heart disease must take into consideration, if possible, etiological, pathological and functional factors. A proper interpretation of symptoms and signs presupposes a clear understanding of the above factors. No longer in the diagnosis of heart disease can we consider pathology alone, nor function alone, but must add etiology as well. A diagnosis based upon all of these factors really enables us to apply effective therapy, which is, after all, one of the most important duties in the practice of medicine.

Disease of the pericardium is much more common than we think. It may be serious in itself, or entirely unimportant, or merely an incident in other serious diseases.

There are three more or less distinct types of pericardial disease—acute, chronic adhesive pericarditis, and congenital defects—which will not be considered in this discussion.

Acute pericarditis may be still further divided into rheumatic, secondary, and idiopathic.

Rheumatic pericarditis is caused by the organism causing rheumatic fever. It is most often but a part of a pancarditis in which the endocardium and myocardium are also involved. It is not the acute stage of this disease which is especially serious, for it is indeed rare for acute rheumatic pericarditis to be fatal and many of the patients are not very sick. This disease, however, merely marks the beginning of a process which ends in chronic heart disease, decompensation and death.

The secondary type is usually found in association with or following other infectious diseases, such as pneumonia, influenza, tonsillitis, tuberculosis and general sepsis. The pericarditis may also arise from an extension of an inflammatory process from the pleura or mediastinum. There is another type of secondary pericarditis which numerically is the most important group—occurring as a terminal infection in various chronic diseases, especially Bright's disease. The organisms concerned in this type of pericarditis are most often streptococcus haemolyticus, staphylococcus aureus, and pneumococcus.

The pericarditis which occurs in association with coronary thrombosis results from necrosis of the underlying myocardium.

The last type of acute pericarditis may be termed idiopathic, apparently occurring as a distinct entity and not in association with any of the usual antecedent or accompanying causes. The prognosis in this type is usually very good.

If the pericarditis is so marked that there is abundant fibrous exudate, and if the inflammatory process persists, there is usually much new tissue formation, in which case the two layers of the pericardium may become completely adherent, obliterating the cavity, with the formation of adhesive pericarditis. In severe cases the pleural and mediastinal tissues also become involved so that the pericardium becomes adherent to the surrounding thoracic structures.

Diseases of the myocardium may be classified as rheumatic, syphilitic, hypertensive, arteriosclerotic, a heterogeneous group caused by other less common but very important infections, and toxic, especially thyrotoxicosis and myxoedema. These different types occur in varying frequency in different sections of the country, one type being more frequent in certain communities; another type being more frequent in other communities.

Rheumatic myocardial disease is very much more frequent in New England, for example, than in Virginia and must be somewhat dependent upon climatic conditions, being more frequent in cold damp climates than in warm dry climates. Social and economic conditions also seem to be important factors, since this type of heart disease is much more frequent among the poor and among those

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whose environment is not so favorable. The real basic cause is the same that causes the original rheumatic infection, which has not as yet been definitely identified, though it is in all probability of the streptococcic group. The myocardial disease, like the pericardial, is but one part of the general rheumatic carditis, for it is most unusual to find one portion of the heart diseased to the exclusion of the other. We do not as yet know whether the reaction in the myocardium is the result of active invasion of the muscles by bacteria, or of tissue reactions, allergic in nature, or of toxins elaborated in various foci of infection present in the rheumatic disease. Bacteriological, serological and allergic studies now in progress will in all probability give the answer to the uncertain knowledge which we have at the present time.

Cardiac syphilis is a very important and serious condition. Like rheumatism, this type of heart disease is more frequent in certain localities than in others. It is especially common in the South owing to our large negro population, syphilis being notably frequent among the negro race. Myocardial syphilis is not nearly as frequent as vascular syphilis. In the wall of the heart it is said to occur as a sclerotic process, a gumma, or as areas of fatty degeneration. The causative agent is, of course, the treponema pallidum.

Hypertension and arteriosclerosis are separate pathological conditions, though they are very frequently associated. This is true because they are both common to the same age period. Hypertension, however, is so frequent and so important clinically, while at the same time sufficiently different, that it is important to give it the emphasis of separate portrayal. The cause of hypertensive heart disease is not known, for this takes us back to the cause of hypertension which is as yet shrouded in mystery. Heredity is probably one of the most important causative factors. Age, and the wear and tear and strains of life are also important. Probably certain toxic and metabolic factors are also important, though just what these factors are we do not know.

We next consider arteriosclerotic heart disease, which after the age of thirty becomes increasingly frequent. Arteriosclerosis can produce myocardial disease directly only as it involves the coronary arteries to such an extent as to limit the blood supply to the myocardium; yet, it may and does produce very grave disease of the heart muscle either by increased strain incident to serious vascular disease, or by involvement of the endocardium and thus seriously handicap the work of the valves, thereby adding to the work of the heart muscle. Since there is really no heart involvement characteristic of arteriosclerosis, except in so far as it is secondary to this malady, the etiology of this type of heart disease is entirely that of arteriosclerosis in general, of which there are four great factors: (1) the normal wear and tear of life incident to the passing years, (2) the acute infections, (3) the intoxications, and (4) those combinations of circumstances which keep the blood tension high.

The heterogeneous group would include the muscle affections resulting from the relatively uncommon infections such as diphtheria, scarlet fever, tuberculosis, typhoid fever, typhus fever, pneumonia, yellow fever, influenza, sepsis and focal infections usually attributable to streptococci or staphylococci.

At the present time it is very generally recognized that cardiac disturbance is frequent with thyrotoxicosis. The exact mechanism leading to the cardiac disability in this disease is not fully understood, though there are several theories which may be summarized as follows: (1) The increased demands on the heart which result from the increased general bodily metabolism; (2) just as the general bodily metabolism is increased, so also that of the cells of the myocardium is increased, which leads to increased wear and tear of the cells resulting in muscle failure; (3) the third factor is that of arterio-venous shunt with blood flowing through widely dilated thyroid vessels, which entails an additional strain on the heart; and, lastly, (4) acute degenerative myocardial changes. Just which of these are the most important etiological factors we do not definitely know, though it would seem that the first two are of greater importance.

Certain cases of myxoedema show marked cardiac hypertrophy and symptoms of myocardial decompensation. The cardiac lesion appears to be the result of thyroid deficiency. This condition is not very frequent, though it is sufficiently frequent for us to consider in the differential diagnosis of obscure heart disease.

Having considered in this sketchy and very incomplete manner diseases of the pericardium and myocardium, we now pass to those of the endocardium. Endocarditis may be classified on an etiological or structural basis, or as benign or malig-

nant, depending upon the severity of the symptoms. Probably the most useful classification is acute, subacute and chronic.

Acute endocarditis may be still further subdivided into rheumatic and bacterial, and the latter into primary or secondary.

The rheumatic and bacterial types are in sharp contrast with one another. The rheumatic type usually begins on a normal valve; the bacterial usually affects a previously diseased valve—most often one diseased by the rheumatic organism. The rheumatic type is very infrequently fatal in its acute stages, whereas the bacterial type often kills in the acute stages and rarely lasts long enough to be termed subacute.

As mentioned elsewhere in this paper, the rheumatic heart infection is essentially a pancarditis and not merely an endocarditis. The myocardial and pericardial disease may clear up and leave few or no traces, but this is not so with endocardial disease. A typical endocarditis consists of a verrucous inflammatory reaction. It seems to be a specific lesion for the rheumatic virus, for its structure is usually characteristic enough under the microscope to justify its diagnosis. These lesions appear in the line of closure of the valves and are not at the edge. They seem to begin in the valve structure rather than on them. Just why these vegetations are situated as they are gives much ground for discussion. We really do not know the exact pathogenesis of these deposits—that is, whether they result from direct bacterial action from the blood stream, or result from embolic invasion of the blood vessels which have been demonstrated by Bayne-Jones, Gross, Kerr and others to exist in the valves at about the site of the common occurrence of rheumatic lesions, or are due to local allergic reactions to toxins circulating in the blood.

The rheumatic causative factor is not definitely known, as has been said, though it is probably of the streptococcic group, as mentioned above. Climatic conditions are also important in the incidence of this infection. Of importance also is the occurrence of infection in families, statistics showing about 33 per cent to 50 per cent of patients with rheumatic infections having close family relations with the history of similar trouble.

Primary bacterial endocarditis is in the majority of cases caused by streptococcus viridans, though rarely the gonococcus may be the causative organism. The infective agents probably reach the valve by the circulatory route. Secondary bacterial endocarditis may be caused by various micro-organisms, though the haemolytic streptococcus, pneumococcus and staphylococcus are the most frequent. In these cases the endocarditis is but an incident in another serious malady and but little changes the clinical picture. Both primary and secondary bacterial endocarditis are alike in the fact that death is the usual end-result—somewhat postponed in the primary, to be sure, and more immediate in the secondary.

Frequently, in fact in most instances, patients survive the acute stages of primary bacterial endocarditis so that the disease becomes subacute, and we see the usual type of subacute bacterial endocarditis which Libman has so well studied and described. This is much the commonest form. It is most frequent between the ages of twenty and forty, and almost always has a history of antecedent rheumatic heart disease, the subacute bacterial endocarditis appearing in valves already affected with rheumatic endocarditis; thus rheumatic heart disease becomes the chief predisposing factor. There is much divergence of opinion as to the mechanism of the involvement of the endocardium. Some feel that the damaged endocardium with small thrombi or ulcerations forms a splendid nidus for lodgment of streptococci that happen to be circulating in the blood; whereas others maintain that these organisms reach the endocardium through blood vessels in the valves. Probably both are right since it is very probable that disease occurs in both ways. Race, climate, social and economic conditions play but a small part in its occurrence except in so far as they favor the predisposing rheumatic infection.

Chronic endocarditis is most often the end-result of rheumatic endocarditis which has healed and has produced the deformed, stenotic, and insufficient valves, giving us the various types of heart murmurs and associated clinical phenomena by which the diagnosis is made. There is another type of chronic endocarditis resulting from syphilis. There are two ways in which the infection takes place, either by extension of the aortitis to the commissures of the aortic valves with formation of adhesions of the cusps of the valves to the aortic walls, or by dilatation of the aortic ring consequent to the weakening which occurs with aortitis.

Both of the above types of chronic endocarditis

may exist for years and the patient lead a life of comfort and usefulness, though the break is liable to occur earlier and be of more serious consequence in syphilitic endocarditis than in rheumatic.

A very important and relatively frequent type of heart disease is that of the coronary vessels. This disease is either more frequent now than formerly, or we are becoming more proficient in its diagnosis, for it is certainly recognized more frequently now than it was ten or fifteen years ago. I am inclined to believe that the disease is really much more frequent than formerly, and it is apparently becoming more and more frequent. This is especially true among the men of our own profession, as was so well emphasized during the past month by Dr. Paul White. The deleterious effect upon the heart is, of course, the result of reduced blood supply to the myocardium. The coronary disorder may be the result of narrowing or blocking of the arteries. In the great majority of cases the cause is atheroma in which calcification takes place, which areas form excellent locations for the formation of thrombi. The cause back of atheroma is that back of general arteriosclerosis. Many factors undoubtedly play a part, notably abnormalities of metabolism, stress and strain of present-day competitive life, faulty diet, infections, and heredity. Rheumatism and syphilis are also important etiological agents. Rarely the disease is embolic in character, and this is especially apt to be true in youth. Advancing years and hypertension are important causative factors. It is much more frequent among males than females, which is almost certainly due to the increased stress and strain of the present-day professional or business man. It is most important that we make every effort to prevent this disease which causes such a high mortality and morbidity rate.

I have attempted to classify heart disease into diseases of its different structural parts merely for purposes of discussion. Clinically, such a classification is not sufficient, for we are interested not so much in the part of the heart diseased as in the nature of the disease and the functional efficiency of the heart as a pumping organ. I have also given the etiological factors which are most common; among these infection of one kind or another plays the most important. Next in importance is advancing years with the stress and strain which we encounter in this highly competitive age, plus the degenerative processes which are more and more in evidence with the passing years. Certain unknown toxic causes may also act in producing heart disease. Metabolic abnormalities, especially those of the thyroid, become more frequent as we become more proficient in the diagnosis of these maladies.

Medical Arts Building.

THE SYMPTOMS AND SIGNS OF CARDIAC FAILURE.*

PAUL F. WHITAKER, M. D., F. A. C. P.,
Kinston, N. C.

In the entire field of clinical medicine there is no subject of more importance than the one your chairman has assigned to me today. Cardiac failure comes under consideration in all diseases that may prove fatal, for the crises of disease are practically all dominated by the strength or weakness of the circulation. The subject concerns the surgeon, as well as the physician, and some of its phases confront every practitioner every day. According to Sir James Mackenzie, heart failure may be defined as that condition in which the heart is unable to maintain an efficient circulation during the efforts necessary for the daily life of the individual. This definition obviously includes cases of advanced failure, as well as those in which the failure is just beginning, and it is important to note that an adequate circulation can be maintained by a heart with considerable structural damage. It is needful to insist upon this point, as the absence of a clear conception of what heart failure means has led to the magnifying of certain obvious signs, such as murmurs, or arrhythmias, which are actually not important when considered from the standpoint of an efficient circulation. In the consideration of signs and symptoms of heart failure, it is manifestly difficult not to touch to some extent the

*Read as part of a Symposium on Heart Disease before the Seaboard Medical Association of Virginia and North Carolina, at Norfolk, Va., December, 1933.

etiology and therapy of the condition—subjects which have been or will be presented by other writers today. However, in so far as possible, the writer will present as briefly as the subject will allow the clinical side of the subject which is often buried under a mass of technical and, by comparison, trivial detail.

Heart failure may be acute or chronic. We have much to learn about acute heart failure. When we say that a patient with pneumonia, typhoid fever, influenza or septicemia, or following an operation dies, that he died because his heart failed, we make a simple statement. However, when we begin to analyze what has happened the problem is far from simple. Death in pneumonia, for example, may be due to bacterial or metabolic toxins derived from the cellular exudate in the lung acting directly on and causing degenerative changes in the heart muscle, or by acting on the vasomotor system, both central and peripheral. It is frequently difficult and at times impossible to tell at which end of the circulatory apparatus failure has occurred, the cardiac or peripheral vasomotor. Physiologists have taught us that the picture of shock—moist skin, extremely rapid and weak soft pulse, low blood pressure, ashy gray cyanosis, and weak almost imperceptible heart sounds—is not due to heart failure but peripheral vasomotor failure. The circulatory failure of severe acute infection is apparently a mixture of both cardiac and vasomotor failure, and frequently the latter predominates. The truth of this statement is readily proven by the fact that a blood transfusion in the terminal stage of pneumonia, after circulatory collapse has become marked, will improve markedly the state of the circulation for hours, as manifested by a slowing and increased volume of the pulse.

Valuable signs of acute heart failure are rapid dilatation of the heart, breathlessness, engorgement of the veins and the development of congestive phenomena. However, heart failure is possible without any of these. There may be only enfeeblement and, perhaps, even slowing of the heart beat. The symptoms of this type are mainly cerebral—due to insufficient blood supply.

The signs and symptoms of chronic heart failure afford a familiar clinical picture. The immediate outcome of the failure of the heart muscle is poor peripheral circulation, the evidence of which is manifes in the organs and tissues of the body, according as these parts are supplied by the laboring heart. If the left ventricle is affected, the result is improper functioning of the systemic arterial system with anemia of the tissues. If the left auricle is effected, there is edema of the lungs and cyanosis—due to stasis in the pulmonary vessels. If the right auricle and ventricle are involved, there are cyanosis, generalized edema and portal stasis. In a severe type of failure there may be a summation of all these symptoms.

The onset of cardiac decompensation may be gradual with fatigue, or gradually developing dyspnea on exertion and precordial pain, going on to edema; or it may be sudden with faintness, vertigo, pain in some cases, with sense of impending death or death itself.

Symptoms of heart failure are always entirely subjective at first and are variable. Breathlessness, constant or paroxysmal, is the outstanding feature of the decompensation status, and is due largely to failure of the respiratory center in the brain to receive the proper blood supply. Other causes may contribute physically, such as stasis in the lung tissue, fluid at the lung bases, and decreased vital capacity. Precordial distress and sense of oppression in the retro-sternal area are reflex-arc symptoms from an embarrassed heart muscle. Anorexia, nausea, vomiting, gastric flatulence and pain are due to congestion and stasis in the gastric circulation. Constipation and diarrhea are due to changes in the tonicity of the musculature of the bowel as a result of stasis of blood. Pain in the upper right abdominal quadrant is due to chronic passive congestion of the liver with stretching of Glisson's capsule. The mental symptoms ranging from vertigo, throbbing headaches, mental depression and failure to concentrate, to the development of a frank psychosis are best explained on the basis of faulty cerebral circulation.

The *signs* of heart failure depend upon the extent of the decompensation. They are best divided into those of early or beginning failure, and those of complete failure.

The signs of beginning failure are briefly as follows: Dyspnea on exertion, slight to moderate, occasionally orthopnea; cyanosis on exertion, tachycardia, sometimes arrhythmia, and cardiac enlargement to the left; an enlarged and tender liver, sometimes the spleen; moist rales over the lung bases with

diminished breath sounds and dullness on percussion. Jaundice may occasionally be present.

The signs of complete failure are constant dyspnea, even at rest, Cheyne-Stokes breathing, cyanosis of the lips and fingers, cold and clammy skin, dilatation of the alae nasi, and frequent short cough with tracheal rattling. The sputum is often blood streaked. Examination of the heart shows dilatation in all directions with a diffuse wavy apex beat. Murmurs previously noted have become fainter or have disappeared enitrely. A pulsating liver may be noted. The heart is extremely rapid and the rhythm totally irregular. The neck veins are dilated, the blood pressure is low, the pulse pressure very low, and at the wrist there may be a pulse deficit. Edema of the feet and legs, external genitalia, abdominal wall and occasionally edema of a dependent arm is present. Passive congestion is everywhere present with hydrothorax, ascites, and sometimes bloody diarrhea. The urine usually shows albumin and casts, and a low reading of the phenolsulphonephthalein test is often present. A psychosis is frequently evident. These, in general, are the symptoms and signs of chronic failure.

Any clinical classification of heart failure cases is manifestly difficult and not entirely satisfactory. Most textbooks discuss only two types, the congestive and the anginoid. However, the practitioner confronts cases in which certain clinical features predominate and a brief discussion of certain clinical types would seem proper. Dr. Cross, of Brooklyn, advances the following clinical classification which offers a fair approach to the clinical side of the question:

I. Symptomatic type, without edema or fibrillation.

II. Congestive failure type:

a. Usual type with edema, rapid pulse, and often fibrillation.

b. Chronic edematous type, with slow pulse, fibrillation either present or absent.

III. Hypertensive type, complicated with nephritis or arterio-sclerosis.

IV. Type secondary to thyrotoxicosis.

V. Anginoid type.

VI. Digitalis proof type.

I. Symptomatic type without edema or fibrillation—This is the type most often missed, and the practitioner should be constantly on the alert for such cases. They often go undiagnosed, for they are slow to consult the physician. The symptoms are few and the findings on physical examination are practically negative. Early fatigue and slight dyspnea in accomplishing acts that the patient could formerly perform with comfort are the chief symptoms. There may be slight to moderate increaase in the pulse rate and occasionally there is a slight hacking cough. A few minutes rest causes quick disappearance of the symptoms.

The physical examination usually reveals nothing definite. The heart sounds are not vigorous, there is no arrhythmia, no murmur is usually present and there are not evidences of pulmonary, hepatic or peripheral stasis. The blood pressure is usually within normal limits, or may be low. The apex beat may be slightly outside its normal limits, but, as the patients are often in the fifth decade of life, this in itself is not significant. If the patient is asked to take moderate exercise, the pulse may be slow to return to normal. The electrocardiogram may reveal preponderance of the ventricle or the height of the amplitude may be restricted. The history, then, consisting chiefly of moderate dyspnea on exertion is probably the chief thing to direct our attention to the heart, and we should be constantly on the alert for this type of case, for, if detected early, proper therapy and restriction of activity offers much in prolonging life and putting off the development of more serious symptoms.

II. Congestive failure type—a. This is the usual type, characterized by dyspnea, edema of the extremities, moisture at the lung bases, and rapid and often irregular heart action. However, there are certain early cases with congestive phenomena, which may be confusing. Coughing, wheezing respiration and haemoptysis may suggest pulmonary rather than cardiac disease. Mitral stenosis has been confused with pulmonary tuberculosis, and many cases of asthma are cardiac rather than bronchial. Jaundice and a tender liver with upper right quadrant pain due to heart disease may be considered to be due to the gall-bladder. A careful physical examination, however, will remove all doubt as to the condition, for the enlarged heart, the presence of valvular defects, the altered balance of the heart sounds, arrhythmia, the discovery of an enlarged liver, the presence of ascites or pleural transudates, all point to the cardiac origin of the symptoms.

b. Chronic edematous type: There is a type with chronic edema and slow pulse rate, which runs a rather protracted course. They may improve from time to time, but the edema is never entirely lost. I recall one patient of this type who, when I first saw him, had had chronic edema of his lower extremities for three years and, though he suffered moderate dyspnea on exertion all the time, had been fairly actively engaged as a yard foreman in a lumber mill. The edema would subside at night and over the week-end, but would never entirely disappear. He was fairly active for two more years before succumbing to a coronary accident.

III. Hypertensive type, complicated with nephritis or arterio-sclerosis—The cause of this type is elevation of the blood pressure, and the patient is usually, but not always, over forty years of age. In this group the symptoms are first purely subjective, but gradually increase in severity. Slight dyspnea on exertion and crepitations at the lung bases on the first day inspiration may be the only signs. The outstanding characteristic symptom of this type is an attack of noctural dyspnea. The patient is awakened from sleep gasping for breath and coughing up large quantities of pink frothy sputum. The pulse is weak and rapid, the color is ashy, and the extremities cold and clammy. Death seems inevitable, but within twenty or forty minutes, especially if morphine and atropine are given, the attack usually subsides. Physical examination of these cases shows considerable dilatation, as well as hypertrophy, as manifest by physical examination and X-ray. The blood pressure is high and there is usually evidence of nephritis or arterio-sclerosis. The cases of so-called paroxysmal pulmonary edema and cardiac asthma should fall in this group. Under this group it is well to note that a sudden drop in blood pressure indicated impending failure. I recall one patient with hypertensive heart disease whom I had observed for some years. She complained of dizziness, and, on examination, a pressure ranging as a rule around 200 systolic had dropped to 140. There was no increase in the pulse rate and no evidence of crepitations in the chest. Thirty-six hours later she developed acute congestive failure with pulmonary edema.

IV. Type secondary to thyrotoxicosis—There are no characteristic symptoms of thyrotoxic heart disease. The early cardiovascular symptoms of thyrotoxicosis itself are due to tachycardia and effort syndrome. They are chiefly dyspnea and palpitation and occasionally heart ache. If failure or auricular fibrillation supervenes these symptoms increase.

Increased heart action both in rate and force is the most common cardiovascular sign in thyrotoxicosis. Enlargement of the heart, arrhythmia and congestive failure, when they occur, manifest themselves in the usual way. In almost 80 per cent of cases of thyrotoxicosis the heart rhythm is normal and the pulse rate is fast, averaging from 100 to 120 per minute at rest. Rare cases may have a normal or only slightly elevated rate. The remaining 20 per cent have a disturbed rhythm—almost invariably auricular fibrillation. The systolic blood pressure is usually somewhat elevated in thyrotoxicosis, while the diastolic pressure remains at a normal or somewhat decreased level. Thus the pulse pressure is usually increased. The important point in this group is to recognize the thyrotoxicosis. Prompt institution of therapy for this condition prevents the development of cardiac damage, and in cases where advanced damage has occurred proper therapy is often followed by most gratifying results.

V. Anginoid type—This type of failure is a most important one, and one which has without doubt sharply increased in the past decade. Precordial or retro-sternal pain or distress, often radiating into the shoulder, the arm, the neck, or the lips, is the outstanding symptom. The sensations may vary from a slight feeling of fullness or distress to a pain of terrible intensity, with a sense of impending death or death itself. Physical exertion or emotional stress is the activating influence in producing the pain. These symptoms may be associated with aortitis, either syphilitic or arterio-sclerotic, but it is essential to remember that severe symptoms and death may occur with no demonstrable signs of heart disease. Exercise is the acid test, and increasing sensitiveness to exertion, be it muscular or psychic, is its chief characteristic. We must be constantly on the alert for the early cases and go carefully into the history of all precordial pain. "Pseudo-angina pectoris" is an unfortunate term and deserves to be discarded. Nearly every case of heart cramp is real and not functional.

In this group fall the cases of coronary thrombosis. The chief symptom is severe, agonizing, almost uncontrollable pain. The distribution is much the same as in angina pectoris, though at times its

distribution may suggest abdominal crisis. The signs are weak and barely palpable pulse, enfeebled heart sounds, marked fall in the blood pressure, slight fever, leucocytosis and the development of a pericardial friction rub. The electrocardiographic signs are usually characteristic.

VI. Digitalis resistant type—This type is added for reason of the fact that, clinically, the cases falling into this group present one of the greatest problems in cardiology. These cases must have another factor besides decompensation, possible reinfection of the endocardium, or the presence of unsuspected disease elsewhere in the body. Splenic enlargement is often present, suggesting bacterial activity. The pulse continues rapid in spite of digitalis, and it is this rapidity of the pulse that differentiates them from the chronic edematous type with slow pulse.

SUMMARY

A general discussion of the symptoms and signs of heart failure has been presented. An attempt to classify and discuss certain clinical types has been made. The essential point to be made is that early recognition of these signs and symptoms before marked cardiac damage has occurred offers the best means of instituting therapy that may prove beneficial.

Medical Arts Building.

CALCIUM ORTHO-IODOXYBENZOATE IN THE TREATMENT OF ARTHRITIS.

THOMAS WHEELDON, M. D.,
Richmond, Va.

Salts of o-iodoxybenzoic acid have been used clinically in the treatment of arthritis since 1926[1] and the oral administration of calcium ortho-iodoxybenzoate has rapidly become the choice of the medical profession.

In an investigation of 282 cases in the past two years calcium ortho-iodoxybenzoate has been used as a part of the routine treatment. Two hundred and thirty-six cases (Group I) were studied in the usual clinical manner, while forty-six cases (Group II) were analysed with full laboratory findings. Roughly, Group I corresponds to the arthritic cases treated by the general practitioner in the usual manner, while Group II gives an accurate measure of the value of the drug where the treatment was carried out uninterruptedly and with the full cooperation of the patient.

Calcium ortho-iodoxybenzoate was chosen because it held out definite promise of curative results, and also because it was safe for country clinic patients to use between visits. It has not been known to cause addiction or to produce allergic manifestations or hepatic damage such as is often seen after the continued use of cinchophen and other quinoline derivatives. In the whole series less than 3 per cent of those treated complained of any gastro-intestinal disturbances.

METHOD OF TREATMENT

A standard treatment is used in all cases. Foci were removed when discoverable. Exercises and apparatus to improve body mechanics, checking of constipation, proper diet, and local treatment of affected joints were employed. Occasionally arthritis vaccine and thyroid were given. Although a few cases received small doses of sodium salicylate and potassium iodide, the majority received only calcium ortho-iodoxybenzoate,* two grams (four ½ gram tablets) daily. No real improvement or lasting effect should be expected in less than thirty days. The patients who cooperated best were the most benefited.

Group I (General Study).—Two hundred and thirty-six cases of arthritis complicated by general orthopedic conditions—faulty posture, deformities of feet and joints, muscle and tendon contractions, etc., and varying degrees of ankylosis. The previous treatment had been varied.

Results:

Improvement	*Number*	*Percentage*
Marked to excellent	116	50%
Fair to good	86	36%
Slight to none	34	14%

*This was obtained from the Smith, Kline and French Laboratories under the name of Oxo-ate "B."

Group II (Special Study).—Forty-six patients were studied with laboratory records which included an X-ray study of left hand, left knee and most seriously involved joint.

These cases were divided into two groups:

Hypertrophic (degenerative) arthritis: thirty-two —70 per cent.

Atrophic (proliferative) arthritis: fourteen—30 per cent.

Results:

Improvement	*Number*	*Percentage*
Good to excellent	41	89%
Fair to slight	2	4.3%
None	3	6.7%

Some of the results were startling—patients who had been chronic sufferers for years were restored to useful activity, employment or housework. There was an improvement noted in hypertensive and heart conditions. These patients were very carefully controlled and the degree of improvement was measured by comparison with a similar group of patients who did not receive calcium ortho-iodoxybenzoate.

Improvement included reduced swelling, as shown by actual measurement of the affected joints—the range of motion was enlarged and the general well-being enhanced. Where intense discomfort is present, calcium ortho-iodoxybenzoate may be administered conjointly with salicylates or other analgesic drugs.

In no case was there X-ray evidence that the joint changes characteristic of atrophic or hypertrophic arthritis had progressed while the patient was under treatment. The sedimentation rate remained stationary or decreased—evidence of systemic improvement. There was a fairly constant lowering of high blood pressure and a material increase in indican output. The writer suggests a frequent examination for indican in the urine. He finds that the amount of indican in the urine apparently gives a fair clinical index of the report on improvement that an examination will show.

Action in the Body.—Detailed pharmacological studies would be necessary before any exact explanation could be given for the physiological effect of o-iodoxybenzoic acid in the body. Pemberton[2] describes its action as that of a "glorified salicylate." Tabern,[3] however, feels that it is beneficial in arthritis because of its definite bactericidal action in the blood stream and because it stimulates leukocytosis and aids antibody formation. He states that o-iodoxybenzoic acid and its salts strikingly increase the permeability of membranes and increase lymph flow 400 per cent.

Without wishing altogether to take exception to the above, the writer would advance the theory that calcium ortho-iodoxybenzoate achieves its beneficial results through stimulating the peripheral circulation. A group of patients comprising Buerger's disease, varicose leg ulcers, and ulceration of the leg from faulty circulation in acute anterior poliomyelitis was used as a means of measuring possible circulatory improvement. The results were so striking that one cannot but conclude that it is by this means (i. e., stimulation of peripheral circulation) that the arthritic patient is improved. Even now, without the more definite data which the writer intends to publish as soon as possible, one can say that, subjectively at least, calcium ortho-iodoxybenzoate improves circulation in the affected joints.

CONCLUSIONS

1. The beneficial effect of calcium ortho-iodoxybenzoate in a general group of 236 cases has been studied over a two-year period.

2. A more detailed study of forty-six cases of hypertrophic and atrophic arthritis is presented.

3. The therapeutic results were most satisfactory, and unpleasant side reactions were negligible.

4. Laboratory findings indicate an increase in indican output, improvement in hypertension, and lowering of sedimentation rate.

5. A theory is advanced as to the physiological action of calcium ortho-iodoxybenzoate in improving peripheral circulation.

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318 West Franklin Street.

Proceedings of the Medical Society of Virginia

MINUTES OF THE SIXTY-FIFTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF VIRGINIA

Alexandria, Virginia
October 9, 10, 11, 1934

GENERAL SESSION

Tuesday Evening, October 9

The opening general session of the Medical Society of Virginia's sixty-fifth annual convention was held in the auditorium of the Elks' Hall, Alexandria, on Tuesday evening, October 9, 1934, and was called to order at 8:15 o'clock by Dr. S. B. Moore, of Alexandria, Chairman of the Committee on Arrangements.

The Reverend E. V. Regester, D. D., Alexandria, said the invocation.

The Society was welcomed to Alexandria in addresses by Honorable E. C. Davison, the Mayor, and Dr. S. B. Moore, Chairman of the Committee on Arrangements, the latter referring, in his address, to some of the many historical personages and events connected with the city.

Dr. Moore then presented the President, Dr. Robley Dunglison Bates, Newtown, and Dr. Bates read his President's Address, entitled "Medicine: An Art and A Science."

Dr. Isaac Peirce, a member of the Committee on Membership, read the names of members who had died within the last year, as follows, the audience standing for a moment in respect to their memory:

List of Members of the Society Whose Deaths Have Been Reported Since the 1933 Meeting

Dr. Benjamin Franklin Iden, Manassas, Va., September 22, 1933.
Dr. Arthur Wellington Rusmiselle, Washington, D. C., October 3, 1933.
Dr. Leon O. Vaughan, Waverly, Va., November 26, 1933.
Dr. Zeb Vance Sherrill, Marion, Va., December 11, 1933.
Dr. Edwin Lawrence Kendig, Victoria, Va., January 15, 1934.
Dr. Allan Moore Kimbrough, Norfolk, Va., January 15, 1934.
Dr. John Walker Carter Jones, Newport News, Va., February 9, 1934.
Dr. George D. White, Roanoke, Va., Date unknown.
Dr. Sydney Sheppard Kellam, Belle Haven, Va., December 12, 1933.
Dr. George Bright Young, Charlottesville, Va., February 13, 1934.
Dr. Harry Wilson Porter, Louisa, Va., February 20, 1934.
Dr. Benjamin Hallowell Swain, Ballston, Va., January 28, 1934.
Dr. William Latane Varn, South Hill, Va., March 21, 1934.
Dr. Robert Daniel Tucker, Powhatan, Va., March 13, 1934.
Dr. William Penn Reese, Taylor's Store, Va., February 22, 1934.
Dr. Clarence Hyde Saunders, Chase City, Va., March 14, 1934.
Dr. Calvin Hawthorne Childress, Norfolk, Va., April 1, 1934.
Dr. Albert Asa Cannaday, Roanoke, Va., February 22, 1934.
Dr. John Marsham Ropp, Roanoke, Va., April 29, 1934.
Dr. George Paul LaRoque, Richmond, Va., May 16, 1934.
Dr. William Francis Cooper, Newport News, Va., May 20, 1934.
Dr. Wyatt S. Beazley, Sr., Richmond, Va., June 6, 1934.
Dr. Chester A. Amos, Alexandria, Va., June 10, 1934.
Dr. Walter Edward Beattie, Alexandria, Va., June 9, 1934.
Dr. Robert Lee Wilkins, Alexandria, June 10, 1934.
Dr. Isaac Errett Wolfe, Coeburn, Va., June 20, 1934.
Dr. William Blount Barham, Big Stone Gap, Va., April 24, 1934.
Dr. Montgomery Thomas McCulloch, Elkton, Va., July 14, 1934.
Dr. Francis Thomas Ridley, Bluefield, W. Va., July 20, 1934.
Dr. Henry Watkins Anderson, Covington, Va., September 4, 1934.

The President announced that Dr. Harvey B. Stone, of Baltimore, who had been invited to make the principal address of the evening, was unable to attend on account of illness but had sent his paper to Dr. Frank S. Johns, by whom it would be read. Dr. Johns then read Dr. Stone's paper, entitled "The General Practitioner's Interest in Rectal Diseases."

President Bates stated that it would be necessary to take up at this time the matter of ratification of the amendments to the Constitution which had been adopted by the House of Delegates at its session on Tuesday afternoon. On motion, duly seconded, the action of the Council in adopting the amendments was ratified.

The Society then adjourned, at nine-forty P. M.

SCIENTIFIC SESSIONS

Wednesday, October 10

Medical Section

The Medical Section of the Medical Society of Virginia met in the auditorium of the Westminister Building of the Second Presbyterian Church, Alexandria, on Wed-

nesday morning, October 10, 1934, with President R. D. Bates presiding, beginning at nine o'clock.

Dr. Harry Walker, Richmond, read his paper entitled "The Treatment of Obesity," which was discussed by Dr. William B. Porter, of Richmond.

Dr. J. Morrison Hutcheson, Richmond, read his paper on "Medicolegal Aspects of Apoplexy," which was discussed by Dr. Beverley R. Tucker, Richmond.

Dr. Frank A. Strickler, University, read his paper entitled "A Study of Convulsive Disorders at the University of Virginia Hospital since 1920," which was discussed by Drs. Frank H. Redwood, Norfolk; and D. C. Wilson, University.

Dr. T. Dewey Davis, Richmond, read his paper on "The Irritable Colon: A Common Condition, Commonly Misunderstood," which was discussed by Drs. Oscar L. Hite, Richmond; J. W. Hunter, Norfolk; and Beverley R. Tucker, Richmond; and by Dr. Davis in closing.

Dr. Regena C. Beck, Richmond, read her paper on "Drug Idiosyncrasy and Neutropenia," which was discussed by Dr. Harvey B. Haag, Richmond.

Dr. D. G. Chapman, Richmond, read his paper entitled "Total Thyroidectomy for Chronic Heart Failure," which was discussed by Drs. Kinloch Nelson, Richmond; William B. Porter, Richmond; Edmund Horgan, Washington, D. C.; J. Morrison Hutcheson, Richmond; James A. Lyon, Washington, D. C.; Edmund Horgan, Washington; by Dr. Porter and Dr. Lyon again; and by Dr. Chapman in closing.

Dr. H. B. Mulholland, University, read his paper entitled "Clinical Study of Rocky Mountain Spotted Fever, Eastern Type," which was discussed by Drs. S. D. Blackford, University; W. L. Powell, Roanoke; L. M. Mason, Washington, D. C.; and Dr. Mulholland in closing.

The program having been completed, the morning session adjourned at 12:45 P. M.

Surgical Section

The Surgical Section of the Medical Society of Virginia, held in the Young People's Building, Alexandria, convened at nine-thirty o'clock, with Dr. Hugh H. Trout, vice-president, presiding.

The first paper on the program was by Dr. J. Coleman Motley, Abingdon, his subject being "Wandering Spleen with Torsion of Its Predicle: Report of a Case." This was discussed by Drs. Frank S. Johns, Richmond; James W. Hunter, Norfolk, A. S. Brinkley, Richmond; and Dr. Hunter again.

Dr. R. DuVal Jones, Jr., Norfolk, read his paper on "Leiomyoma of the Gastro-Intestinal Tract with Presentation of Two Cases," which was discussed by Drs. Carrington Williams and Charles R. Robins, both of Richmond, and in closing by Dr. Jones.

The next paper was by Dr. Charles R. Robins, Richmond, his subject being "The Cure of Direct Inguinal Hernia." Discussion was by Drs. R. DuVal Jones, Norfolk; Carrington Williams, Richmond; J. Shelton Horsley, Richmond; and in closing by Dr. Robins.

The paper by Drs. C. C. Coleman and W. G. Crutchfield, Richmond, was read by Dr. Coleman, the subject being "Further Observations in the Treatment of Acute Head Injuries." This was discussed by Dr. Herbert Jones, Petersburg; and Dr. Coleman, in closing.

Dr. J. M. Emmett, Clifton Forge, read his paper entitled "Fifteen Hundred Spinal Anesthesias with Special Reference to Indications, Complications and Mortality," which was discussed by Dr. I. A. Bigger, Richmond; Dr. Herbert H. Schoenfeld, Washington; Dr. Frank S. Johns, Richmond; and in closing by Dr. Emmett.

Dr. Guy W. Horsley, Richmond, read his paper on "Surgical Treatment of 183 Consecutive Thyroid Cases with No Mortality," which was discussed by Drs. C. Bruce Morton, University; Stuart McGuire, Richmond; Linwood Keyser, Roanoke; and J. Shelton Horsley, Richmond.

The paper by Drs. Charles S. White and J. Lloyd Collins, Washington, was presented by Dr. White with motion pictures, their subject being "Evipal Anesthesia."

The Surgical Section adjourned at 12:40 A. M.

Wednesday Afternoon

General Session

The Medical Society of Virginia met in the auditorium of the Westminister Building and was called to order at 3:15 P. M. by President Bates.

Dr. John S. Weitzel, Richmond, read his paper on "Problems in Breast Feeding," which was discussed by Dr. Thomas D. Jones, Richmond.

Dr. H. J. Warthen, Richmond, read his paper entitled "Gas Bacillus Infections; A Study of the Incidence, Treatment, and Mortality," which was discussed by Dr. H. B. Holsinger, Farmville.

The following papers were read as a Symposium on Medical Economics:

"Medical Education, Specialization, and the Private Practitioner"—Dr. J. C. Flippin, University.

"Sickness Insurance"—Dr. Walter B. Martin, Norfolk.

"Federal, State, County, and Municipal Relations to Medicine and the Care of the Indigent Sick"—by Dr. I. C. Riggin, State Health Commissioner, Richmond.

"General View of the Whole Program"—Edgar Sydenstricker, Director, Public Health Activities, Milbank Memorial Fund (invited guest).

In calling for Dr. Riggin's paper, the President took this occasion to formally introduce him to the audience as the new State Health Commissioner.

The papers constituting the symposium were discussed by Drs. W. L. Powell, Roanoke; J. Shelton Horsley, Richmond; R. L. Raiford, Franklin; and G. F. Simpson, Purcellville.

The program having been completed, the afternoon session adjourned at 5:45 P. M.

Wednesday Evening Session

The Society convened in the auditorium of the Westminister Building, Dr. James K. Hall, Vice-President, Richmond, presiding, and was called to order at 8:15 P. M.

Dr. M. H. Todd, Norfolk, read his paper on "Colles' Fracture," which was discussed by Dr. H. Page Mauck, Richmond, and by Dr. Todd in closing.

Vice-President Hall announced the receipt of a telegram from Dr. J. H. Hiden, of Pungoteague, stating that he was unable to be present on account of illness. (Dr. Hiden was to read a paper entitled "Experience with an Efficient Method of Operation for Hemorrhoids, Adapted to General Practice in Rural Districts.")

Dr. Joseph F. Geisinger, Richmond, read his paper on "The Cystic Kidney," which was discussed by Drs. Linwood D. Keyser, Roanoke, and A. I. Dodson, Richmond.

The evening session then adjourned at 9:15 P. M.

Thursday, October 11

The Society met in the auditorium of the Westminister Building with the President presidng and was called to order at 9:10 A. M.

Dr. James P. Baker, Jr., Richmond, read his paper entitled "Anemias Dependent Upon Food Deficiencies," which was discussed by Drs. William H. Higgins, Richmond; J. S. DeJarnette, Staunton; again by Dr. Higgins; by Dr. R. H. Manson, McKenny; again by Dr. Higgins; and by Drs. J. Shelton Horsley, Richmond; Greer Baughman, Richmond; and by Dr. Baker, in closing.

Dr. H. Hudnall Ware, Jr., Richmond, read his paper on "Some Extra-uterine Complications of Pregnancy," which was discussed by Drs. Greer Baughman, Richmond; L. M. Mason, Washington, D. C.; Joseph Bear, Richmond; and by Dr. Ware in closing.

The paper of Drs. J. Edwin Wood, Jr., George D. Capaccio, and William Weaver, of University, entitled "Venous Pressure and Body Weight Determinations in Congestive Heart Failure" was presented by Dr. Wood and was discussed by Drs. Alex. F. Robertson, Jr., of Staunton; Walter B. Martin, Norfolk; J. S. DeJarnette, Staunton; by Dr. Martin again; by Dr. T. H. Daniel, Charlottesville; and by Dr. Wood, in closing.

Dr. Claude Moore, Washington, read his paper entitled "Pathological Lesions Correctly Diagnosed by Roentgenologic Methods and Later Missed at Surgical Exploration," which was discussed by Dr. Wright Clarkson, Petersburg.

The paper of Drs. Thomas D. Walker, Jr., and W. W. Falkener, of Newport News, and J. Shelton Horsley, Richmond, entitled "Vomiting in the New Born, with Special Reference to Duodenal Atresia: Report of Two Cases," was read by Dr. Walker and was discussed by Dr. Horsley, and by Dr. Walker in closing.

The paper of Drs. J. B. Nicholls and L. R. Broome, Catawba Sanatorium, on "Collapse Therapy in Pulmonary Tuberculosis" was read by Dr. Nicholls and was discussed by Drs. E. C. Drash, University; C. P. Cake, Washington; Dean B. Cole, Richmond; W. E. Brown, Blue Ridge Sanatorium; and by Dr. Nicholls in closing.

The report of the House of Deleagtes was read by Miss Agnes V. Edwards, the Secretary, and, on motion, was received and adopted.

President Bates spoke of the necessity of electing a councilor from the Seventh District, in which there is a vacancy due to the redistricting of the State, and asked the members of the Society in that District to decide upon and recommend to the incoming President the appointment of one of their number as Councilor.

PRESIDENT BATES: Dr. Francis H. Smith, of Abingdon, who is your President-Elect, needs no introduction to you. I ask Dr. Smith to come forward now. (Dr. Smith came to the platform.)

Dr. Smith, I take great pleasure in handing over to you this gavel, and I do it with the assurance that I turn it over to a man who knows how to use it and who will do it.

DR. FRANCIS H. SMITH: Mr. President and gentlemen: I appreciate more deeply than any words can express what you know and what I realize is the highest honor to come to any physician in the State of Virginia. At the same time, I am not going to let a feeling of responsibility weigh too heavily on my shoulders, and I expect to enjoy this next year of service. I say, without any feeling of irreverence, that I am among you as one who serves, and I expect to carry out that motto in this next year.

Is there any further business to come up? (No response.) None appearing, a motion to adjourn is in order.

(A motion to adjourn was offered and seconded.)

PRESIDENT SMITH: I declare the Sixty-fifth Annual Session of the Medical Society of Virginia adjourned.

The Society adjourned *sine die* at 12:40 P. M., Thursday, October 11, 1934.

BUSINESS SESSIONS

Council

The Council of the Medical Society of Virginia met in the George Mason Hotel, Alexandria, Va., October 9th, at 11:00 A. M.

The President, Dr. R. D. Bates, presided. Others present were Dr. F. H. Smith, president-elect, and the following councilors: Drs. Griffin W. Holland, P. St. L. Moncure, Roshier W. Miller, Wright Clarkson, J. T. McKinney, Percy Harris, J. E. Knight, C. B. Bowyer, and J. M. Emmett, and Miss Agnes Edwards, Secretary. Dr. E. H. Miller sent a wire, regretting his inabilty to be present.

The minutes of the mid-winter meeting, as printed on pages 405-6 of the October, 1934, issue of the MONTHLY, were approved.

The budget, prepared by Drs. Wright Clarkson and Roshier W. Miller, was presented. Dr. Clarkson stated that the Society had been exceeding its income very greatly in the past few years and asked the support of the Council in adhering to the budget. Dr. Smith asked about the appropriation for the Department of Clinical Education and said the Department had asked for $500.00 and felt that was the smallest amount with which they could accomplish work they had planned. After discussion, Dr. Harris moved that the Council accept the budget as presented. This was seconded by Dr. McKinney. Dr. Bowyer said that clinics had been put on by the State Societies in North Carolina and Tennessee, he thought, with Federal aid and asked if it was possible that this could be done in Virginia. The idea was ex-

pressed that this work was possibly done with aid from some fund like the Commonwealth Fund which has helped our Society. The budget was then accepted as presented, Dr. Smith opposing it on account of the amount allotted the Department of Clinical Education.

Dr. Clarkson said that we might need additional money for operating expenses between now and the first of the year, and he moved that the secretary-treasurer be authorized to borrow on our present bonds, rather than sell them, for such amount as might be needed for the next few months. This was seconded and carried.

Dr. Bates said that he would not call for reports from individual councilors but would be glad to hear from any councilor who had any matter to bring to the attention of the Council.

Dr. Knight read a letter he had received from doctors in Orange County, stating that they wished to secure a charter in the name of the Orange County Medical Society. It was moved, seconded and carried that a charter be granted this society.

Dr. Emmett felt that we could increase our revenue if we could induce all members of local societies to join the State Society. After discussion, Dr. McKinney moved that Dr. R. W. Miller be appointed to present to the House of Delegates a statement as to our financial condition and urge delegates to stimulate interest in the State Society by trying to get all members of local societies to join the State Society. This was seconded and carried.

The secretary stated that newspaper men had asked if they could secure some of the papers to be read at the general sessions for the purpose of publishing extracts from them in their newspapers. It was the opinion of the Council that they could sit in meetings and take their own notes but could not be furnished papers as it was contrary to the principles of the Society.

There was next a discussion of whether a Councilor has the right to vote in the House of Delegates. It was stated that the words *"ex officio"* mean by virtue of office and according to Robert's Rules of Order they were allowed a vote. In order to avoid confusion in this matter, however, the President ruled that at this meeting the Councilors should have a vote in the House of Delegates.

A statement was made that the last General Assembly had re-districted the State into nine districts instead of ten as heretofore and this would mean that we would lose a councilor. It was moved that the status of the Council as to old Congressional Districts should stand during this meeting but that the new Council be elected in accordance with the nine congressional districts. Seconded and carried.

There being no further business, the meeting adjourned.

AGNES V. EDWARDS, *Secretary.*

House of Delegates

The first meeting of the House of Delegates was held in the Young People's Building, Alexandria, Va., October 9th, at 2:25 P. M., with the president, Dr. R. D. Bates, presiding.

Roll call showed a quorum present.

The minutes of the last meeting, as printed in the December, 1933 issue of the MONTHLY, were approved.

The budget, as approved by the Council, was read by the secretary, and Dr. R. W. Miller, a councilor and also a member of the budget committee, explained why certain appropriations had been made and stated that it was necessary that the Society live within this budget. It was moved, seconded and carried that the budget, as presented, be accepted.

Dr. Miller then urged the delegates to endeavor to increase membership in the State Society by trying to get those who were members of their local societies and not members of the State Society to join. The Council recommended that the first year's dues for the State Society might be collected by the local society and forwarded to the State Society office. Dr. C. L. Harrell moved that all delegates be instructed as to this recommendation and that if possible a fee of $5.00 for membership in the State Society be sent in with application for membership in local societies. This was seconded and carried.

Auditor's Report—October 1, 1933, Through September 30, 1934

TO THE OFFICERS AND COUNCILORS,
MEDICAL SOCIETY OF VIRGINIA,
RICHMOND, VIRGINIA.

GENTLEMEN:

We have made an examination of the books of account of the MEDICAL SOCIETY OF VIRGINIA, RICHMOND, VIRGINIA, for the fiscal year ended September 30, 1934, and submit herewith our report, consisting of the following financial statements and related comments:

EXHIBITS

"A" Balance Sheet.

"B" Cash Receipts and Disbursements.

Comments

A summary of the financial condition of the Society at September 30, 1934, compared with a similar tabulation as of September 30, 1933, shows:

	9-30-34	9-30-33	Decrease
Cash	$ 910.07	$ 1,699.95	$ 789.88
Accounts Receivable	2,880.75	3,250.00	369.25
Investments—Bonds (At Par)	2,250.00	5,950.00	3,700.00
Total Assets	$ 6,040.82	$10,899.95	$4,859.13
Less: Accounts Payable	1,002.49	476.39	526.10*
Net worth	$ 5,038.33	$10,423.56	$5,385.23

*Increase.

The cash receipts and disbursements for the current year are set forth in EXHIBIT "B" and are briefly summarized below:

Receipts—Income	$13,572.43
Receipts—Non-Income (Bonds)	3,773.97
Total Receipts	$ 17,346.40
Disbursements—Expenses	18,136.28
Disbursements in excess of receipts	$ 789.88
Cash balance beginning of year	1,699.95
Cash balance end of year	$ 910.07

As may be seen from the foregoing tabulation, the receipts representing INCOME for the current year were only $13,572.43, while disbursements for EXPENSES aggregated $18,136.28, resulting in an operating deficit for the year of $4,563.85. During the year $3,500.00 of the liberty bonds held at the beginning of the year were sold to meet current obligations and liquidating dividends totaling $200.00 were received on mortgage bonds owned. After giving effect to these non-income receipts, the cash balance at the end of the year was $789.88 less than at October 1, 1933. Our report for the prior year showed an operating deficit of $4,484.67.

We would recommend that the Society give careful consideration to the amount of income that will be available to meet 1934-35 expenses before making appropriations for that year.

We checked in detail the cash receipts and disbursements of record and established by direct communication with the First & Merchants National Bank, Richmond, Virginia, the funds on deposit. Securities owned, as listed on the balance sheet, were verified by inspection.

The amounts owing by members for dues, and accounts due for advertising in and subscriptions to the MEDICAL MONTHLY are shown at collectable values, as estimated by the Secretary-Treasurer. No attempt was made to verify these by direct communication with debtors. The Secretary-Treasurer stated that there were no outstanding liabilities at September 30, 1934, other than those shown on the Balance Sheet.

Insurance protection in force consists of—

Fire—Office Furniture and Fixtures	$1,000.00
Fidelity Bond—Secretary-Treasurer	3,000.00
Fire—Walter Reed Home, Belroi, Va.	1,000.00

Respectfully submitted,

A. M. PULLEN & Co.,

Certified Public Accountants.

Balance Sheet—September 30, 1934

Exhibit "A"

ASSETS

CASH (EXHIBIT "B"):		
On Deposit—First & Merchants National Bank:		
Checking Account	$ 559.07	
Savings Account	351.00	
		$ 910.07
DUE FROM MEMBERS: (Estimated Collectible Value)		
1934 Annual Dues—400 @ $5.00 each		2,000.00
ACCOUNTS RECEIVABLE:		
VIRGINIA MEDICAL MONTHLY:		
For advertising	$ 830.75	
For subscriptions	50.00	
		880.75
SECURITIES OWNED:		
Fourth U. S. Liberty Loan Bonds, 4¼% (1938)	$1,500.00	
Collateral Trust Bonds (At Par)	$1,000.00	
Less: Liquidating Dividends	250.00	750.00
		2,250.00
Total Assets		$6,040.82

LIABILITIES

ACCOUNTS PAYABLE:		
For preparation of Medical Journal	$ 502.49	
For attorney fee	500.00	
		$1,002.49
SURPLUS:		
Excess of Assets over Liabilities		5,038.33
Total Liabilities and Surplus		$6,040.82

Cash Receipts and Disbursements
For Year Ending September 30, 1934
Exhibit "B"

RECEIPTS			DISBURSEMENTS		
MEDICAL SOCIETY OF VIRGINIA:			MEDICAL SOCIETY OF VIRGINIA:		
Dues—Members		$4,527.11	Salaries (Apportioned):		
Interest on Securities and Savings Account (one-half)		134.52	Secretary-Treasurer	$1,620.00	
Old Outstanding Checks Dropped		3.00	Clerical Assistance	660.00	
Refund of Unused Appropriation by Department of Clinical Edution (1933)		7.50			$2,280.00
Sales—3rd Volume on History of Medicine		256.50	Rent and Telephone		344.01
		$ 4,928.63	Stationery and Office Supplies		79.94
			Postage		252.72
			Reporting Annual Meeting		166.25
			Officers', Councilors' and Committeemen's Expense		49.53
			Badges		32.40
			Programs		56.00
			Repairs and Replacements—Office Equipment		18.50
			Audit Fee (Apportioned)		30.00
			President's Expenses		25.00
			Invited Guests' Expense		15.00
			Cost of Publishing Third Volume on History of Medicine		2,250.00
			Attorney Fee		500.00
			Miscellaneous Expenses		22.77
			Department of Clinical Education		1,457.07
			Committee on Scientific Work and Clinics		47.07
			Committee on Legislation (Net)		325.00
					$ 7,951.26
VIRGINIA MEDICAL MONTHLY:			VIRGINIA MEDICAL MONTHLY:		
Advertising		$5,095.77	Salaries (Apportioned):		
Subscriptions:			Secretary-Treasurer	$1,620.00	
Members	$3,018.08		Clerical Assistance	660.00	
Non-members	395.43				$2,280.00
		3,413.51	Preparing of Journal (including cost of distribution)		5,960.67
Interest on Securities and Savings Account (one-half)		134.52	Rent and Telephone		340.93
		8,643.80	Repairs and Replacements—Office Equipment		18.50
Total Receipts (Income)		$13,572.43	Stationery and Office Supplies		33.95
			Office Postage		48.90
			Audit Fee (Apportioned)		30.00
			Miscellaneous Expenses		13.73
					8,726.68
REALIZATION FROM ASSETS HELD AT OCTOBER 1, 1933:			SPECIAL APPROPRIATION:		
Sale of U. S. Liberty Bonds (Par $3,500.00)		$3,573.97	Committee on Prenatal and Postnatal Instruction		$5,559.46
Liquidating Dividends on Mortgage Bonds		200.00	*Less:* From Commonwealth Fund		4,101.12
		3,773.97			1,458.34
Total Receipts		$17,346.40	Total Disbursements (For Expenses)		$18,136.28
			Other Disbursements		None
			Total Disbursements		$18,136.28
CASH BALANCE—OCTOBER 1, 1933		1,699.95	CASH BALANCE—SEPTEMBER 30, 1934 (Exhibit "A")		910.07
		$19,046.35			$19,046.35

The next order of business was reports of committees as published in the October, 1934, issue of the MONTHLY. As it was stated that the report of the COMMITTEE ON REVISION OF THE CONSTITUTION AND BY-LAWS would have to lay on the table for a day, this report was taken out of order and called for at this time, being presented by the Chairman, Dr. P. St. L. Moncure. Dr. C. H. Peterson moved that the Constitution as amended be adopted as a whole. This was seconded and carried, and Dr. Lewis Holladay moved that the amendments to the By-Laws be accepted, with final action to be taken the following day. Seconded and carried.

A recess was then given for the delegates from the various districts to get together and select a Nominating Committee. The following were named:

1st District—Dr. Griffin W. Holland.
2nd District—Dr. W. B. Martin.
3rd District—Dr. F. P. Fletcher.
4th District—Dr. C. E. Martin.
5th District—Dr. I. C. Harrison.
6th District—Dr. W. L. Powell.
7th District—Dr. K. F. Maxcy.
8th District—Dr. J. A. Gibson.
9th District—Dr. Isaac Peirce.
10th District—Dr. J. M. Emmett.

In the Report on GROUP SOCIETIES, the chairman, Dr. Southgate Leigh, read a portion of a letter that had been sent out by his committee. Dr. Moncure moved the adoption of the report as published (pages 414-15). Dr. Clarkson commended the work of Dr. Leigh and his committee and moved that we not only adopt the report but give him a rising vote of thanks. Seconded and carried. Dr. C. O. Dearmont moved that $100.00 be given Dr. Leigh for his expenses for the coming year. Seconded but motion was ruled out of order as budget had been adopted. As the report of Dr. Leigh's committee carried a request for an appropriation, it was moved that the House rescind the motion of the adoption of this report. This was seconded and carried and motion was made that the report be accepted, omitting the clause referring to an appropriation. Seconded and carried. Dr. W. B. Martin moved that the House of Delegates recommend to the budget committee that they find out about Dr. Leigh's expenses and take this into consideration at the next meeting of the committee and reimburse him if possible next year. Seconded. Dr. J. T. McKinney felt this was a bad policy because there were many chairmen of committees who spend their personal money and Dr. Moncure felt that the Society would be setting a bad precedent to do this for any committee. The motion being put to vote was lost.

SCIENTIFIC WORK AND CLINICS (page 407)—Dr. Carrington Williams moved that this report be adopted with the recommendation that only the appropriation as allowed in the budget be given the committee. Seconded and carried.

PUBLICATION AND PROGRAM (page 409)—It was moved that this be accepted. Seconded and carried.

MEDICAL EDUCATION AND HOSPITALS (pages 409-10)—Dr. J. W. Preston, chairman, read the recommendations which were incorporated in the report and explained the idea of the Committee with regard to these. Dr. M. B. Hiden moved adoption of this report. Seconded and carried.

MEMBERSHIP (page 410)—Adopted.

LEGISLATIVE COMMITTEE (pages 407-9)—Accepted. Dr. G. F. Simpson moved that a rising vote of thanks be given Dr. Clarkson, chairman, for his work. Carried.

WALTER REED COMMISSION (page 410)—Adopted.

MATERNAL WELFARE (pages 410-11)—Accepted.

CHILD WELFARE (page 411)—Accepted.

DEPARTMENT OF CLINICAL EDUCATION (pages 411-14)—Dr. Carrington Williams moved the adoption of this report except that the appropriation be in conformity with the adopted budget. Seconded and carried. Dr. Kinloch Nelson moved that the secretary be instructed to write the Commonwealth Fund and Mr. Eutsler letters of appreciation. Seconded and carried.

PUBLIC RELATIONS (page 415)—Dr. I. C. Harrison, chairman, explained the action of the Committee as stated in the report with regard to fees to be charged for care of the indigent sick. Report adopted.

MILITARY AFFAIRS AND NATIONAL DEFENSE (pages 415-16)—Adopted.

TUBERCULOSIS CLINICS (page 416)—Accepted.

MENTAL HYGIENE (pages 416-17)—Adopted.

INQUIRY AS TO EFFECT OF USING IODIZED SALT (page 417)—Accepted.

ADVISORY BOARD TO WOMAN'S AUXILIARY (page 417)—Accepted.

It was moved, seconded and carried that the report of the COMMITTEE TO INVESTIGATE IRREGULAR PRACTICES AT CERTAIN STATE HOSPITALS be held over until the next meeting of the House with the hope that the chairman, Dr. J. Bolling Jones, might be present.

Dr. F. H. Smith, President-elect, felt that the Society had too many special committees and asked the House if they wished all of them continued. Dr. Harrison said that the President had power to appoint or discontinue any special committee. Dr. Simpson moved that this be considered at the next meeting of the House after members have studied the matter. Seconded and carried.

It was moved and carried that the report of the delegates to the American Medical Association be taken up at the next meeting of the House as no delegate was present.

Dr. M. B. Hiden moved that New Business also be held over until the next meeting. Seconded. Dr. J. F. Geisinger offered a substitute motion that we take up new business at this time. This was seconded and carried.

Dr. C. L. Harrell moved that the Society go on record as opposing giving free information regarding patients to life insurance companies and recommended that a fee be charged in accident indemnity cases. Dr. J. L. Rawls felt that this would be bad for the patient because if the doctor refused to give information the insurance company would feel that the patient had something wrong with him and would refuse to issue a policy. Dr. M. O. Burke said he had been paid for such information by insurance companies. Dr. I. C. Harrison stated that he was not in favor of doing work for insurance companies without

getting pay but it is hard to specify what your charge should be. Dr. Harrell cited specific cases when he sent in bills for information to insurance companies and had them refuse to pay. Dr. Simpson said he wrote insurance companies that he gave no information without pay. Dr. Hiden felt this was all right where accident insurance is concerned. The motion was put to vote and carried.

Dr. M. B. Hiden said that practically every other organization has some way to protect its members and he had written some of the delegates suggesting that we have a protective committee for the Society, especially to protect members against insurance companies and government agencies. He told of an instance of sending a bill for $50.00 for services to an insurance company and having a check sent him for only $20.00. When he questioned this payment, the company refused to pay more and he had no organization to which he could appeal. If an insurance company robs a man who belongs to a labor union, the man is protected by the union. He moved that we have a protective committee formed in this Society to advise members on these matters and to do everything in their power to get justice for individual members of the Society. The motion was seconded by Dr. Isaac Peirce and carried.

Dr. Peirce said the question of cost would have to be taken into consideration because a committee of this kind to function properly would have to have money to work with.

Dr. C. E. Martin told of a chiropractor in his town who does more practice than any doctor there. He stated that the man has some political pull and, although he was indicted for practicing medicine illegally, he got by with it. Now he is really practicing medicine though he took down the word "doctor" and calls himself a masseur.

Dr. G. F. Simpson said we have a committee on Medical Economics which should do what Dr. Hiden wishes and the chiropractor should come under the head of the Ethics Committee. Dr. Hiden did not feel that money would be necessary, but doctors should report injustices to this committee and have them worked out. The idea is to have a committee to investigate these problems and see what can be done about them. Dr. Hiden's motion being put to vote was carried.

The House then adjourned to meet at 1:00 P. M., the following day.

October 10, 1934

The second meeting of the House of Delegates convened at 1:00 o'clock, Wednesday, October 10th, in the Young People's Building, Alexandria, with the President, Dr. R. D. Bates, presiding.

A quorum being present, the first order of business was the reading of the report of the COMMITTEE TO INVESTIGATE IRREGULAR PRACTICES AT CERTAIN STATE INSTITUTIONS. This was presented by Dr. W. B. Martin, a member of the committee, as follows:

Report of Committee to Investigate Irregular Practices at Certain State Institutions

Your Committee appointed to investigate the various points of conflict between the public clinics and hospitals and the practitioners of medicine in this State desires to submit the following report. It is quite evident that such a committee, without funds at its disposal, could make no investigation on the ground. We were forced, therefore, to rely on the questionnaire method of investigation. These questionnaires were sent to the heads of the various State-supported institutions engaged in providing medical care; to the physicians associated with these institutions, and to practitioners throughout the State.

It is impossible to review in detail the information and suggestions received in response to these questionnaires, but from a consideration of the subject of our investigation certain general principles emerge.

It is conceded that the State* has a definite responsibility in the field of public health and in the care of certain types of cases, as a matter of public welfare. The proper line of cleavage between State and private practice is poorly defined and it is the existence of this twilight zone that causes so much difficulty.

The State should provide adequate hospital care for the indigent. This duty is especially definite in those cases where the general public welfare is concerned, as in the care of the tuberculous and the insane.

The State should assist in paying the hospital cost of patients on the border-line of poverty. They differ only in degree from the outright indigent. They may be able to pay part of the cost of hospital care but cannot support the entire expense. These patients should be encouraged to contribute what they can. They should not be denied hospital care on account of their inability to pay in full, nor should they be pauperized by being provided free service.

Adequate investigation of all cases receiving State aid should be made by agencies in the locality from which the patient originates, so that the interest of the State and the tax-payer may be conserved. This principle should apply to all institutions furnishing free or part free service.

Public health activities should be extended so as to provide the maximum amount of protection to all of the people through the application of the principles of preventive medicine. We believe that those measures of protection that have to be carried out on a large scale, or over a wide area, to be effective are properly a concern of the State. For example, immunization against certain communicable diseases has to reach a considerable fraction of the population before an effective barrier against the spread of infection is raised.

The State or its agents should not enter the field of medical practice nor compete on a cut-rate basis with private institutions.

Specific examples embodying these principles will make our meaning clearer. When the State establishes an institution and fixes a charge for private patients below

*The term state here refers to a unit of government whether State, municipal or county.

the cost of such service it is engaged in unfair competition with private institutions in the same field. This is particularly true if the character and amount of State aid is covered up and when the public is led to believe that the rate charged allows for a fair and reasonable profit. The operation of the private division of the Western State Hospital illustrates this point. If such items as capital cost, insurance, taxable value, depreciation and saving from free labor are included along with these other expenses, a correct estimate could be reached of the actual cost per patient day. The difference between this figure and what is actually paid by the patient represents the amount of State subsidy. This figure should be known to the tax-payers of the State. Furthermore, it is to the interest of the people of the State that private institutions for the care of those that can pay should be encouraged. It would seem a reasonable solution of the problem if patients who are entitled to it were granted the same subsidy regardless of whether they chose to be treated in a private or a public institution.

This same principle can be applied to the tuberculosis sanatoria. At present there are 760 beds in these State sanatoria. Of these 125 are free beds, all occupied, with a waiting list of 178. There are 635 pay beds, sixty-five of which are vacant. The patient who pays the regular rate in these institutions is paying only a part of the cost of his maintenance. The State and incidentally the tax-payer is paying the difference. Here again the State is competing with private institutions on a cut-rate basis. Furthermore, the State is making totally inadequate provision for the indigent group, as witness the waiting list of 178. At the same time the pay group includes many individuals who could and should pay the entire cost of their care. We believe that the State should first provide for the indigent group to the limit of its financial ability, that those who are able should pay the full cost of their care, and that the part pay group should be selected on the basis of their actual inability to pay the entire cost. The amount of the State's actual contribution to these patients should be determined and a subsidy should be granted regardless of whether the patient enters a private or a public institution. The same general care should be exerted in selecting patients for admission to general hospitals and clinics operated or supported by the State. It is important that free service or part pay service should be extended to those who actually need it. It is equally important that the interest of the tax-payer be protected by not giving such service to those who can pay. The proper working of a free hospital or clinic service must be founded on an accurate check on their intake.

The use of the facilities of public institutions in carrying on private practice is, of course, to be condemned, nor should these institutions extend service except of an emergency nature to those who are able to pay.

BE IT RESOLVED, That the Medical Society of Virginia adopt the principles set forth in the report of this committee as representing our viewpoint as to the proper relationship of the various State activities in medicine to the people and to the medical profession.

BE IT FURTHER RESOLVED, That a copy of this report and of these resolutions be published in the official journal of this Society for the information and guidance of all of our members and that the matter be now referred to the Legislative Committee.

J. BOLLING JONES, *Chairman,*
WALTER B. MARTIN,
J. E. K. FLANNAGAN.

Note.—Other members of Committee were not present when this report was signed.

Dr. Martin moved the adoption of the resolutions accompanying this report. Seconded and carried.

Dr. W. C. Akers said that certain State-supported institutions in this State admit people from various parts of the State without a thorough investigation as to whether or not they are able to pay their bills. He has in his files the names of people who are able to pay who have been to these institutions. He moved that we embody in the resolutions that the State institutions must have a certificate from the family physician or the welfare department of the county from which the patient comes before he is admitted for treatment in the institution. Dr. W. L. Powell asked about pay patients in the tuberculosis sanatoria. Dr. Martin said this was included in the report and resolutions. The agency in the county from which the patient comes should investigate all cases going to State institutions. A large number of tuberculous patients are not taken care of. The resolutions also care for this. If a patient is dependent, he should be allowed to go to a State institution or to a private sanatorium, the State paying the cost at that sanatorium. Dr. Akers asked if there was anything in the report to ask State institutions to look after these patients. Dr. Martin said their report and resolutions are intended only as the basis of a code of ethics but there is no way of enforcing them. Dr. J. T. McKinney said that in the fight in legislature last winter it was impossible to get the cooperation of the doctors of the State. If we undertake to change the situation at the T. B. sanatoria, he did not believe we would meet with success. Economic conditions throughout the State are unsettled and to attempt to change the time honored custom of sending patients to the T. B. sanatoria would certainly not increase our popularity. Dr. Percy Harris wished to know if Catawba Sanatorium investigates cases of patients who go there. He stated that this is done at Blue Ridge Sanatorium and if they do not have a certificate they are sent back. Dr. F. J. Wright stated that the T. B. sanatoria of the State are in the same category as the medical colleges and insane institutions and we should not do anything to cripple tuberculosis prevention activities. Dr. C. L. Harrell said that since the meeting last year, the State Health Department has changed its policy and no patient is admitted to T. B. sanatoria without a certificate from the family physician. Dr. J. E. K. Flannagan stated that their committee is trying to see that the indigent of the State are cared for and if the State does not take care of that class of patients it is falling

short of its duty. This should have grave consideration in the adoption of this report. Quite a number of pay beds in State sanatoria are vacant and a lot of indigent patients are on a waiting list. We should not have vacant beds for only people who can pay. Dr. Simpson thought if we pass the resolutions, we will approach the problem in a practical manner, and will be doing something that will be constructive to the health of the State. Dr. Akers stated that he did not have in mind the tuberculosis institutions of the State. He had not been able to get a patient in one of these without making out an application for him and he felt the resolutions took care of his motion if they are carried out.

Dr. Flippin stated that he was in favor of the spirit of what had been said. At the University, when individuals write in regard to treatment, they are asked for statements from their doctors. If they desire free treatment, they are asked for a testimonial as to whether they should be admitted on a free list. He did not feel there was an adequate welfare organization in a good many of the counties and it would be quite a burden for physicians to have to endorse all patients. He said further that patients brought to the hospital in emergencies cannot be turned down. Were the rule carried out that a physician had to refer such, it would be very hard on these patients. The University would like to have every case sent in by a physician but, with conditions that exist in the State, they cannot see how it is practical at this time. Dr. Flippin said that he understood the resolution was only a recommendation and asked the institutions to cooperate with them. He thought that fair and was perfectly willing to comply with it, but felt that to lay down a rule would make it very difficult. If the patient at the T. B. sanatorium who is able to pay would pay, it would increase the number of free beds for indigent patients. Dr. J. N. DeShazo agreed with Dr. Flippin's viewpoint and said that the tax-payer who gets something generally feels like he pays for it because he pays taxes and he feels like it is fair to have something given him for them.

Dr. Martin said that the committee was not trying to pass a law but simply proposed certain principles to prevent the unfair use of State funds in the care of indigent patients. The report of the committee was then adopted.

The report of the DELEGATES TO THE A. M. A. (Pages 419-20) was next called for. It was moved, seconded and carried that this be accepted.

THE REVISION OF THE BY-LAWS (pages 417-19) was now taken up and it was moved and seconded that they be adopted as a whole. Dr. Carrington Williams offered an amendment to Article I, Section 1, to omit "and those not members of a component society but active members of this Society in good standing at the time of the adoption of these By-Laws." Dr. Simpson felt the adoption of this section with these words included would break down the county society as a unit and seconded Dr. Williams' motion. Dr. Williams' motion was put to vote and lost. The By-Laws were then adopted as originally amended.

Dr. F. H. Smith asked if he had the right to discharge special committees if he saw fit. Dr. J. A. Hodges did not feel Dr. Smith should do away with any of the special committees but only discharge them when they finished their special work. Dr. C. B. Bowyer moved that the House of Delegates discharge all special committees. Seconded. Dr. J. C. Flippin offered an amendment that they be discharged at the end of the session. Seconded and carried.

The following report was received from the Woman's Auxiliary:

Annual Report of the President of the Woman's Auxiliary to the Medical Society of Virginia

MR. PRESIDENT AND MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA:

I have the honor of presenting the Annual Report of the Woman's Auxiliary for the year ending October 1, 1934.

The principal objective of the State Auxiliary has been the organization of new county auxiliaries where the co-operation of the respective Medical Society was assured. Other State objectives have been continuing prenatal care education, advocating yearly health examinations, and carrying on various types of hospital work.

Every month reports from the county auxiliaries are published in the VIRGINIA MEDICAL MONTHLY. State news is also published in the *National Bulletin.*

Upon recommendation from the Auxiliary to the Southern Medical Association, a State chairman has been appointed for the purpose of promoting the Jane Todd Crawford Memorial project.

There are eight organized county auxiliaries and one junior auxiliary in the State. These auxiliaries include seventeen counties.

There are 231 active members. The treasurer reports 193 members have paid their dues up to date. In all of the auxiliaries many members represent the auxiliary on the boards of welfare and civic organizations in their respective communities.

Health Education has been particularly emphasized not only among auxiliary members but also in promoting health projects in other women's organizations. The Norfolk County Auxiliary has endorsed the Health Education Program of the State Superintendent of Schools. This Auxiliary has particularly emphasized yearly physical examinations and proper diet by showing moving pictures combined with lectures on these subjects before ten schools, churches and civic organizations. The Richmond Auxiliary sends out birthday cards reminding their members of their yearly health examination. At a meeting of the Auxiliary in Petersburg, a paper was read on the "Life and Career of Jane Todd Crawford." The Auxiliary to the James City and New Kent Medical Society sends out birthday cards for a yearly examination. At each meeting a health article from *Hygeia* is included in their program. The Warwick County Auxiliary furnishes a member of the Medical Society for health lectures in the public schools. At each Auxiliary meet-

ing in Richmond guest speakers talk on some interesting educational health subject.

The county auxiliaries report all types of public relations work. The principal work of the Postgraduate Auxiliary, Petersburg, is contributing to the needs of the Postgraduate Hospital at Petersburg. In order to raise funds to accomplish this end, they held two rummage sales, the proceeds from these being $149.00. They also sponsored a linen shower. For this a contribution was made through the churches. This amounted to about $600.00 worth of material. They have co-operated with the Y. W. C. A. by contributing two memberships. The Auxiliary to the Richmond Academy of Medicine rewarded the five-point children from every school in the State by giving them a trip around Richmond and serving them lunch; seventy-five children were entertained this year. This Auxiliary supplied milk for undernourished school children. Fifteen members gave clerical help during the Early Diagnosis Campaign of the Richmond Tuberculosis Association. The Norfolk County Auxiliary made two monetary contributions to families of needy physicians. Magazines and books have been taken regularly to seven hospitals and welfare organizations. The James City and New Kent Auxiliary collects and gives used clothing to the county health nurse for needy families. They are co-operating with the Red Cross, Kings Daughters, and Parent-Teacher Association in their health program and sewing production work. The prenatal care program of the Warwick County Auxiliary has been outstanding. Members of this Auxiliary paid eighty-three visits to prospective mothers, medical attention and nursing was arranged for layettes, bed linens and food supplies were given. Children were cared for while mothers were in the hospitals. In addition, this Auxiliary co-operated with the Cosmopolitan Club by checking upon school children's glasses. One operation was financed; 572 garments were given for storm relief; shoes were given seventeen children and Santa Claus visited sixteen. The Lynchburg Auxiliary contributed to the milk fund of the public schools.

Each Auxiliary has its social program. Some of the meetings are followed by teas. Card parties, moving pictures and plays were sponsored by the auxiliaries for the purpose of raising funds to carry out the program of the auxiliaries.

The Richmond Auxiliary is contributing funds to the new project of the Richmond Academy of Medicine—the establishing of the Pathological Museum. The Norfolk Auxiliary has furnished the doctors' Assembly Hall with new draperies.

The members of the Woman's Auxiliary express appreciation to the editor of the VIRGINIA MEDICAL MONTHLY for allowing us space in each issue for Auxiliary news.

I wish to take this opportunity to thank the President and the members of our Advisory Council for their interest in this Auxiliary and the wise counsel which they have given us.

Respectfully submitted,

GERTRUDE M. BURGES HARRIS,
(Mrs. William Lett Harris)
President of the Woman's Auxiliary to the Medical Society of Virginia.

The report of the Nominating Committee was then called for and presented by Dr. W. B. Martin, as follows:

President-Elect—Dr. P. St. L. Moncure, Norfolk.

Vice-Presidents—Dr. Carrington Williams, Richmond; Dr. S. B. Moore, Alexandria; Dr. Alexander F. Robertson, Jr., Staunton.

Executive Secretary-Treasurer—Miss Agnes Edwards, Richmond.

It was moved, seconded and carried that the report of this committee be accepted as a whole.

Invitations were presented for the 1935 meeting from the Norfolk County Medical Society and from the A. T. Henderson Company for a trip to Bermuda. Dr. Hodges moved that we accept the invitation to Norfolk. This was seconded and carried.

Dr. R. W. Miller offered the following resolution: That the secretary be requested to wire Dr. William F. Drewry, expressing the regret of the members of the House of Delegates that illness prevented his attendance in Alexandria, that we miss his inspiration and helpfulness and that we hope for his sure and speedy recovery. This was seconded and carried.

By ballot, Dr. Wright Clarkson, Petersburg, was elected delegate to the American Medical Association for a term of two years, and Dr. R. W. Miller, Richmond, alternate for a term of two years.

Dr. C. L. Harrell moved that the secretary be instructed to thank the Alexandria doctors for their hospitality. Seconded and carried.

The following councilors from the even numbered districts were named:

2nd District—Dr. Julian L. Rawls, Norfolk.

4th District—Dr. Wright Clarkson, Petersburg.

6th District—Dr. W. L. Powell, Roanoke.

8th District—Dr. J. E. Knight, Warrenton.

It was stated that it would also be necessary for the members of the 7th District to appoint a councilor as, in the redistricting of the State, the former 7th District councilor is now in the 8th District. As no delegates were present from the 7th District, the appointment was left to the incoming president.

There being no further business, the meeting adjourned.

AGNES V. EDWARDS, *Secretary.*

The President, Dr. F. H. Smith, later appointed Dr. C. O. Dearmont, White Post, as Councilor for the 7th District upon nomination of delegates from that District.

CONSTITUTION AND BY-LAWS MEDICAL SOCIETY OF VIRGINIA

(As Revised and Adopted at Sixty-fifth Annual Meeting in Alexandria, Va., October, 1934)

CONSTITUTION

ARTICLE I—TITLE

The name of this organization shall be the Medical Society of Virginia. The words "the Society" in this constitution and its By-Laws shall be construed to mean "the Medical Society of Virginia."

ARTICLE II—PURPOSES

The purposes of this Society are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession.

ARTICLE III—COMPONENT SOCIETIES

The State of Virginia shall be divided into component medical societies of one or more counties. The Constitution and By-Laws of these societies shall be in conformity with those of the State Society, and the principles of Medical Ethics of the American Medical Association shall govern the members.

ARTICLE IV—COMPOSITION OF THE SOCIETY

White physicians in Virginia, not practicing sectarian medicine, members of a component society, are eligible to active membership. Provision may be made for associate membership.

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall be the business and legislative body of the Society, and its membership shall consist of the delegates elected by the component societies, the President, the President-elect, and the members of the Council.

ARTICLE VI—COUNCIL

The Council shall have charge of the business affairs of the Society when the House of Delegates is not in session, and shall prepare and present a budget for the ensuing year to the House of Delegates at its first session. The Council shall consist of one member from each Congressional district of the State, together with the President and President-elect.

ARTICLE VII—OFFICERS

The officers of the Society shall be a President, a President-elect, who shall succeed to the Presidency the following year, three Vice-Presidents, and an Executive Secretary-Treasurer. The office of the Executive Secretary-Treasurer may be held by a non-member.

The officers shall be elected during the annual session of the House of Delegates, and will begin service at the adjournment of the annual session and continue until the end of that term, or until a successor qualifies. The term of office shall be for one year.

ARTICLE VIII—STANDING COMMITTEES

The Standing Committees of the Society shall be: (1) Publication and Program, (2) Scientific Exhibits and Clinics, (3) Department of Clinical and Medical Education, (4) Legislation, (5) Medical Economics, (6) Membership, and (7) Ethics.

ARTICLE IX—TRUST FUND FOR POST-GRADUATE CLINICAL EDUCATION

The last five living ex-presidents shall constitute a special committee to collect and hold in trust the post-graduate fund of the Society. The retiring president shall be chairman.

ARTICLE X—ANNUAL SESSION

There shall be an annual session of the Society and the date and place of the meeting shall be determined by the House of Delegates, but at its discretion, these may be selected by the Council.

ARTICLE XI—FUNDS

Funds for the society may be raised by a per capita assessment, voluntary contributions and other business activities. The funds shall be expended to carry out the general purposes of the Society.

ARTICLE XII—SEAL

The Society shall have a seal bearing date of organization of the Society. The power to change or renew the seal shall rest with the House of Delegates.

ARTICLE XIII—BY-LAWS

The Society may adopt by-laws not in conflict with this Constitution.

ARTICLE XIV—AMENDMENTS

This Constitution may be amended at an annual session by a two-thirds vote of the House of Delegates, and ratified by the general meeting, provided such amendment is previously published in the official publication of the Society, at least a month before the annual meeting. All previous constitutions of the Society are repealed when this Constitution is adopted and put into effect.

ARTICLE XV—WHEN IN FORCE

This Constitution as revised shall be in force upon its adoption by the House of Delegates, and ratification by a general meeting of the Society.

BY-LAWS

ARTICLE I—MEMBERSHIP IN THE SOCIETY

Section 1—Members of the Society are classified as active and associate. Active membership is based upon membership in a component society.

The active members of the Society shall be those who are members in good standing in component societies and those not members of component societies but active members of this Society in good standing at the time of the adoption of these By-Laws, and all physicians in good standing in counties in which there is no component

society, provided they meet all the requirements of the State Society, and have the endorsement of the present members of the Society from such county.

Active members, who move out of the State, become associate members of the Society. Teachers of sciences allied to medicine and medical officers of the Army, Navy and Public Health Service, temporarily stationed in Virginia, may be elected to associate membership through component societies, or by the House of Delegates upon recommendation of the Membership Committee. Associate members may resign membership by giving notice to the Executive Secretary-Treasurer, or, on recommendation of the Ethics Committee, be suspended or expelled by the House of Delegates for sufficient cause. Any associate member, eligible to membership in a component society, may be required by the Council to make application for membership in such component society.

Section 2—No one shall be enrolled as an active or associate member of this Society until the Executive Secretary-Treasurer has received his or her prorated annual dues.

Section 3—The privileges of voting, holding office, and serving on committees is limited to the active membership. In all other respects the status of the active and associate members is the same.

Section 4—For long, faithful or distinguished service, the House of Delegates, upon recommendation of the Membership Committee, may elect annually two resident members and one non-resident physician to honorary, active or associate membership.

Section 5—Every member, after verification of good standing from the rolls, shall register and be given a membership badge before taking part in any of the proceedings of the annual session. All badges shall be furnished by the Society.

ARTICLE II—COMPONENT SOCIETIES

Section 1—The component societies shall be those holding charters from the Society. All component county societies holding charters at the time of the adoption of these By-Laws will retain such charters as component societies.

Section 2—There shall be only one component society in a county. A component society may embrace one or more counties. When a component society qualifies, it may obtain a charter upon application to the Executive Secretary-Treasurer, said charter to be signed by the President and the Executive Secretary-Treasurer. Should it seem desirable that a county unite with a county or counties in an adjoining congressional district, as a component organization, such action may be taken provided it be sanctioned by the councilor from each of the districts concerned. Such component organization shall be deemed to be in the jurisdiction of the councilor of the district in which the majority of the membership resides.

Section 3—A component society consisting of two or more counties may upon petition to the Council be divided and given separate charters, if the Council is of the opinion that such division is in the interest of medical organization.

Section 4—Each component society shall judge the qualification of its own members.

Section 5—A component society shall drop from its roll a member whose license to practice medicine in the State has been revoked or whose membership in the State Society has been lost on account of misconduct.

Section 6—A member expelled by the component society can appeal to the State Society through the Ethics Committee.

Section 7—A member may join a more convenient component society in an adjoining county, provided the component society of the county in which such member resides gives its consent.

Section 8—Each component society shall send to each annual meeting of the Society its number of delegates and alternates fixed by Article IV, Section 2 of the by-laws.

Section 9—The Secretary of each component society shall keep a roster of its members, including name, address, year of graduation, college, date of State license, and such other information as may be desired by the Society. Once a year, not later than July the 1st, the secretary of each component society shall send a list of its members to the Executive Secretary-Treasurer of the State Society.

Section 10—The component societies shall co-operate with the officers of the State Society to carry out the plans, laws and purposes of this organization.

ARTICLE III—GENERAL MEETINGS

Section 1—The general meetings of the Society are open to all registered members and guests.

Section 2—At each annual meeting there shall be an address by the President and not more than two addresses by invited guests.

Section 3—With the exception of the address by the President and invited guests, no address, paper, or other contributions on the program shall be longer than fifteen minutes.

Section 4—No one shall discuss a paper more than once and then for only five minutes, except the leader of the discussion of a selected symposium, who may be allowed a maximum of ten minutes.

Section 5—No contribution shall appear on the program unless the title is sent to the Executive Secretary-Treasurer at least five weeks before the annual session, and only then when endorsed by the Program Committee. No member may present more than one paper at an annual session.

Section 6—If the author is not present when a paper is called, it shall be placed at the end of that section of the program. An author who has been absent twice without having submitted a typewritten paper to the secretary for publication shall be debarred from the program for two (2) years.

Section 7—All papers and contributions are the prop-

erty of the Society and cannot be published elsewhere without the consent of the Publication Committee.

Section 8—The scientific work of the Society may be divided into two or more sections.

Section 9—In a general meeting, after the program of a section is completed and before the House of Delegates adjourns, a member may initiate any business matter not previously considered in the House of Delegates, to be acted upon by that body, provided a quorum of fifty (50) members be present in the general meeting.

Section 10—A rule governing the program or conduct of a general meeting may be changed only by a two-thirds vote of the members present.

ARTICLE IV—HOUSE OF DELEGATES

Section 1—The first assembly of the House of Delegates shall be held on the first day named for the annual session. Subsequent meetings shall be held at hours which will not conflict with the scientific program. The reports of committees shall be published in the official publication of the Society in the issue preceding the annual session. These reports may be discussed and amended by the House of Delegates. Discussions shall be limited to five minutes.

Section 2—Each component society shall elect annually to membership in the House of Delegates, one delegate and one alternate for each thirty-five (35) members or major fraction thereof, or as the component society may elect, one delegate and one alternate from each county in such component society. In any event, each component society is entitled to at least one delegate and one alternate in the House of Delegates. In case the full number of delegates accredited to a component society are not present at the meeting of the State Society, those members present from such component society shall, from members of that society present, elect or appoint a sufficient number of delegates to complete its quota.

Section 3—Thirty delegates representing at least ten component societies shall constitute a quorum of the House of Delegates.

Section 4—The President shall preside over the meetings of the House of Delegates. The Executive Secretary-Treasurer shall be the Secretary.

Section 5—If the eligibility of any member is questioned, the president may appoint a committee on credentials to report on such member or refer the case to the Committee on Ethics.

Section 6—The House of Delegates shall elect officers of this Society as provided for in Article V of the By-Laws.

Section 7—The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the constitution and by-laws of that organization. Such delegates shall be elected by ballot, and each member will be allowed to vote for as many of the nominees on the ballot as there are delegates and alternates to be elected. Those receiving the highest votes will be declared elected as delegates and those receiving the next highest votes will be declared elected as alternates.

Section 8—The House of Delegates shall nominate to the Governor of Virginia at the proper time in accordance with the laws of Virginia, members of the State Board of Medical Examiners.

Section 9—The House of Delegates, at each annual session, shall have authority to approve, modify or reject the budget recommendations presented by the Council for the ensuing fiscal year. In case a budget is not presented by the Council, the House of Delegates shall have authority to prepare the budget.

Section 10—The House of Delegates may revoke the charter of a component society for violation of the laws of the Society.

Section 11—The House of Delegates may appoint special committees from its own membership or from the membership of the Society.

Section 12—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates at each annual session.

Section 13—All officers and delegates elected, all nominations made to the Governor and a summary of all other business transacted by the House of Delegates shall be reported to the Society at a general meeting before the close of the annual session, in accordance with Article V of the Constitution.

ARTICLE V—ELECTION OF OFFICERS

Section 1—The House of Delegates, at its first meeting, shall elect from its membership a Committee on Nominations, consisting of one member from each Congressional District who shall be nominated by the delegates present from that district and, in event a district is not represented in the meeting, such nomination shall be made by the President. This Committee shall report to the House of Delegates the result of its deliberations in the form of a ticket containing the names of one or more members for each of the offices to be filled at the annual session. Nothing in this section shall be construed to prevent additional nominations being made from the floor by members of the House of Delegates. The election of officers shall be by ballot and a majority vote is necessary for election. The lowest nominee will be dropped on each ballot until one receives a majority vote. In case of a tie, the president shall cast the deciding vote.

Section 2—Only active members in good standing are eligible to office.

Section 3—The House of Delegates shall at each annual session elect a President-elect for a term of one year. No member of the Society who lives in the city or county in which the Society is holding its session shall be eligible to election to the office of President-elect for the succeeding year. At the end of this term, the President-elect shall automatically become President for a term of one year.

Section 4—The House of Delegates at each annual session shall elect three (3) vice-presidents to rank as-

cordingly, these to represent the various sections of the State, as far as possible.

Section 5—The House of Delegates shall at each annual session elect an Executive Secretary-Treasurer for a term of one year.

Section 6—On the second day of the annual meeting of the Society at such time and place as shall be designated by the President, Counciiors shall be elected for a term of two (2) years by the delegates from their respective Congressional Districts, those from the odd numbered Congressional Districts on odd years, and those from the even numbered Congressional Districts on the even years. At this time, should there be a vacancy in the membership of the Council and the district not represented in the meeting, the House of Delegates, on nomination by the President, shall elect a Councilor for that district.

Section 7—In case there is a vacancy in the office of President-elect, or in case the President-elect was appointed pro tempore by the Council, the House of Delegates at the annual session shall also elect a President for the following term.

ARTICLE VI—DUTIES OF OFFICERS

A. *President*

Section 1—The President shall be the executive head of the Society.

Section 2—The President shall be the presiding officer at the general meetings of the Society, president of the House of Delegates, chairman of the Council, and ex-officio member of all committees. The President shall vote in the general meetings, in the House of Delegates, and in the Council only in the case of a tie. If the President or the President-elect cannot be present, a Vice-president shall preside over the general meetings, the House of Delegates, the Council or special scientific sections.

Section 3—The President shall deliver the annual address and shall have the privilege, after conference with the chairman of the Program Committee, of inviting as many as two guest-speakers at the annual session.

Section 4—The President shall fill any vacancy occurring between annual sessions in the Council, delegates to the American Medical Association, and standing committees, and such appointments shall be valid until the end of the next annual session. He shall appoint any necessary special committees at the time he takes office, or during the year.

Section 5—The President, in conjunction with the Committee on Publication and Program, shall prepare the annual scientific programs.

Section 6—The President shall visit as many of the component societies of the State Society as possible during the year, in the interest of the Society, actual expenses incurred being paid in accordance with budget determined upon by the House of Delegates.

B. *President-Elect*

Section 7—The President-elect shall be an ex-officio member of the House of Delegates and an ex-officio member of the Council. The President-elect shall act for the President in his absence or disability, and shall automatically succeed to the presidency at the end of the term.

Section 8—The President-elect, at the annual session when he assumes the office of President, shall appoint one member in place of the retiring member on each standing committee and shall name the chairmen of the standing committees for the ensuing year. Announcement of these names shall be made at the general meeting when he assumes office.

C. *Vice-Presidents*

Section 9—The Vice-presidents shall assist the President in the discharge of his duties and the Councilors in their districts in the organization of component societies. In event of the disability, death or resignation of the President, a Vice-president, according to rank, shall succeed him for the remainder of his term of office.

D. *Executive Secretary-Treasurer*

Section 10—The Executive Secretary-Treasurer of the Society shall be the executive agent of the Society, the the secretary of the general meetings, secretary of the House of Delegates, secretary of the Council, and general manager of the official publication of the Society.

Section 11.—The Executive Secretary-Treasurer shall be the custodian of all property of the Society, provide for registration of members at general meetings, conduct the general correspondence of the Society, and, with the consent of the President, employ necessary assistance.

Section 12—The Executive Secretary-Treasurer shall collect all money due the Society and pay out these funds upon written order of the President, or upon his designated authority. The Executive Secretary-Treasurer shall be bonded as approved by the Council.

Section 13—The Executive Secretary-Treasurer shall mail notices to members at least two months before the annual session asking for papers and shall, under the direction of the Publication and Program Committee prepare and send to each member a program of the annual session.

Section 14—The Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates at each annual session.

ARTICLE VII—COUNCIL

Section 1—The Council shall consist of the President, President-elect and one member from each Congressional District. The Council shall be the executive and finance committee of the House of Delegates and shall have charge of the business affairs of the Society when the House of Delegates is not in session. The President shall be the chairman of the Council and the Executive Secretary-Treasurer shall be its secretary.

Section 2—Each councilor shall be the organizer, advisor and censor for his district. A councilor shall visit each component society in his district once a year.

Section 3—Four members of the Council together with

the President or President-elect shall make a quorum. Actual expenses may be paid members attending meetings of the Council in the interim between the annual sessions.

Section 4—At each annual session, the Council shall present a budget for the next fiscal year, based on the expected income and expenditures during this period, which budget shall be presented to the House of Delegates for its approval.

Section 5—The Council shall be charged with the duty of organizing the whole state into component societies, and, at each annual session, shall report on this work to the House of Delegates, with recommendations. The Council shall recommend to the House of Delegates the revocation of a charter of a component society when such component society flagrantly violates the rules of the Society.

Section 6—The Council shall provide offices for the Society headquarters.

ARTICLE VIII—STANDING COMMITTEES

The Standing Committees of the Society shall be as follows:

1. Publication and Program.
2. Scientific Exhibits and Clinics.
3. Department of Clinical and Medical Education.
4. Legislation.
5. Medical Economics.
6. Membership.
7. Ethics.

Each of these Committees, with the exception of the Department of Clinical and Medical Education, shall consist of three members, whose term of office shall be for three years. The members having first been appointed for one, two and three years, the incoming President shall appoint to fill vacancies created by expiration of term of office, and shall name the chairman of each committee. No member may serve on more than one standing committee the same year.

The Department of Clinical and Medical Education shall consist of the State Health Commissioner, the immediate ex-president, who shall be chairman, one member each from the two medical schools of the State, and two members of the Society from the State at large, the last four to be appointed by the incoming president.

All committees shall make reports annually to the House of Delegates. The chairman of all standing or special committees not members of the House of Delegates, shall have the privilege of the floor when reporting to the House or in any incidental discussions.

Actual expenses of members of such committees required to do official work in the interim between annual sessions may be paid upon the recommendation of the chairman of such committees and the endorsement of the president, if presented within thirty days after the meeting, provided budget allowance be made for such purpose in accordance with Art. VII, Section 4.

Publication and Program

Section 1—The Committee on Publication and Program shall conduct the affairs of the official publication of the Society in accordance with the expressed policy and adopted budget of the Society. Its chairman shall be Editor of the official publication of the Society. This Committee shall also have charge of the preparation of the annual program.

Scientific Exhibits and Clinics

Section 2—The Committee on Scientific Exhibits and Clinics shall have charge of the scientific exhibits and clinics for the annual sessions, in co-operation with the President. This committee shall endeavor to stimulate interest in scientific and research work among the members of the Society, and may institute appropriate methods to this end.

Department of Clinical and Medical Education

Section 3—The Department of Clinical and Medical Education shall endeavor to bring about co-operation of the Society with the medical schools, hospitals, clinics, and other teaching institutions of the State with the idea of maintaining the highest standards in these institutions; and to use every means to encourage and advance medical science, and bring it within easy reach of the postgraduate practitioners of the State. The retiring President shall be chairman of this Committee.

Legislation

Section 4—The Committee on Legislation shall endeavor to secure and enforce legislation in the interest of public health, scientific medicine, and the moral, social, fraternal, and ethical betterment of the medical profession in the State.

Medical Economics

Section 5—The Medical Economics Committee shall be the Committee to which are referred all questions of the business relationships of the Society.

Membership

Section 6—The Committee on Membership shall pass upon the applications for membership of those not members of a component society and make recommendations for honorary membership. The Committee shall also, through co-operation with component societies and the Executive Secretary-Treasurer, prepare proper obituaries for deceased members.

Ethics

Section 7—The Committee on Ethics shall consider all matters involving ethics and conduct of members on appeal from the component societies and may act independently in cases not under the jurisdiction of a component society.

All charges against any member shall be in writing, specifically stated, and signed by the accuser. The individual accused and under investigation shall be entitled to a personal hearing or representation. No charge against a member shall be heard by the Society or the House of Delegates, unless it has first been referred to the Committee on Ethics.

No motion or discussion of expulsion, suspension or other censure of any member shall be allowed unless such member shall have been given two months' notice through the Committee on Ethics. The committee shall make its report to the House of Delegates at the first meeting during the annual session.

No member shall be expelled from the State Society except by a vote of three-fourths of the members of the House of Delegates present. Should the member come forward within twelve months succeeding his or her expulsion and offer satisfactory explanation, he or she may be reinstated, provided three-fourths of those present in the House of Delegates concur.

ARTICLE IX—COMMITTEE TO ADMINISTER TRUST FUND FOR POSTGRADUATE CLINICAL EDUCATION

Section 1—The retiring President shall be chairman of the special Committee of Ex-Presidents to provide a trust fund for postgraduate clinical education. The executive secretary shall act as secretary. The committee shall be active in securing subscriptions to the trust fund of the Society for postgraduate clinical education. This committee shall receive all contributions to this fund, contract with a good trust company for the investment of same in good securities, and each year pay to the department or committee in charge of clinical education the interest and other revenues accruing from the investment of this fund.

Section 2—The principal of the trust fund for postgraduate clinical education shall remain in trust and the interest and other revenues accruing from the investment of this fund shall be used by the department or committee in charge to help defray expenses of postgraduate clinical education. Members who have subscribed as much as $250.00 to the Trust Fund for postgraduate clinical education shall thereafter be exempt from payment of annual dues.

ARTICLE X—DUES

Section 1—There shall be an annual assessment of $5.00 upon each member. These dues for each calendar year shall be made in one payment and are payable before December 31, of each year. Members joining the Society after June the 30th, shall be assessed $2.50 for the remainder of that fiscal year.

Section 2—The Executive Secretary-Treasurer is charged with the duty of collecting or adjusting past due per capita assessments, after conference with the President, and, if necessary, the Councilor of the district in which the member in arrears resides. A member, whose dues are twelve months in arrears, shall be dropped automatically from the rolls of the Society.

Section 3—Honorary members or others deserving it, at the discretion of the President, will be exempted from the payment of annual dues. Any member over seventy (70) years of age upon his request may be so exempted by the Executive Secretary-Treasurer.

Section 4—The fiscal year of the Society for membership shall correspond with the calendar year.

ARTICLE XI—OFFICIAL PUBLICATION

The official publication of the Society shall be known as the VIRGINIA MEDICAL MONTHLY. Publication of the journal shall be under the control of the Publication and Program Committee which shall co-operate in every way with the various committees of the Society for the good of the organization.

ARTICLE XII—ETHICS

The ethical principles governing the members of the American Medical Association shall govern the Society.

ARTICLE XIII—RULES OF ORDER

The deliberations of the Society shall be conducted in accordance with parliamentary usage as defined in Roberts Rules of Order.

ARTICLE XIV—AMENDMENTS

These By-Laws may be amended by a two-thirds vote of the House of Delegates, provided such amendment is proposed in writing and has laid on the table for at least one day. All previous By-Laws of this Society are repealed when these By-Laws are adopted and put into effect.

ARTICLE XV—WHEN IN FORCE

These By-Laws shall be in force upon adoption by the House of Delegates and ratification by a general meeting of the Society.

Public Health Statistics

I. C. RIGGIN, M. D.

Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during September, 1934, showed the following cases compared with the same month in 1933:

	1934	*1933*
Typhoid and Paratyphoid Fever	137	157
Diphtheria	197	309
Scarlet Fever	225	324
Measles	60	57
Meningitis	5	8
Poliomyelitis	21	11
Rocky Mountain Spotted Fever	6	2
Typhus Fever	1	1
Undulant Fever	1	7
Tularaemia	4	3

In the minds of physicians the hunting season is commonly associated with tularaemia, a disease deadly to rodents and usually transmitted to man by them. There are cases on record where tularaemia has been transmitted through bites of flies and ticks but the majority of cases give a history

of handling rabbits. Care should be taken not to contaminate the hands through open abrasions or the conjunctival sac with portions of the internal organs or body fluids of infected animals, and when eaten should be thoroughly cooked.

Aside from the seriousness of this disease, it should be of especial interest to us for it is the only disease worked out entirely by American investigators. McCoy and Chapin first discovered the organism in 1911 in ground squirrels in Tulare County, California, from which the name was derived. It was not until seven years later, that the first human case of infection was recognized. Since then an increasing number of cases have been reported from all but the northeastern part of the United States.

The disease is caused by Bacterium Tularense, a small pleomorphic organism, Gram negative, nonmotile and non-spore bearing, which grows only under aerobic conditions on glucose cystine agar. A temperature of 58° C. kills the organism in ten minutes so that adequate cooking renders the infected tissue harmless.

Though the typical case may be easily diagnosed, Dr. Blackford,* of the University of Virginia, presents a history of thirteen cases to point out the difficulties encountered in differential diagnosis. His cases simulated a wide variety of conditions—syphilis, primary glandular adenopathy, genitourinary disease, pustular acne, typhoid fever, pyelitis, tuberculosis, lung abscess, bronchopneumonia, central nervous system disease, and chronic bronchitis. He suggests that since accompanying pathologic changes in the chest were found in six of his thirteen unselected cases, they might be manifestations rather than complications of the disease.

The disease occurs in four clinical types:

1. Ulceroglandular, the primary lesion being a papule, later an ulcer of the skin, accompanied by enlargement of the regional lymph glands.

2. Oculoglandular, the primary lesion being a conjunctivitis, accompanied by enlargement of the regional lymph glands.

3. Glandular, without primary lesion, but with enlargement of the regional lymph glands.

4. Typhoidal, without primary lesion and without glandular enlargement. This type has occurred largely in laboratory workers.

*Blackford, Staige D.—VIRGINIA MEDICAL MONTHLY, 58: 10-13, April, 1931.

The incubation period varies from one to nine days, the average being slightly more than three. The onset is sudden and is manifested characteristically by headache, chilliness, chills, aching bodily pains, sweating, prostration and fever. In the ulceroglandular type, which seems to predominate in this vicinity, the patients complain within forty-eight hours after onset, of pain in the area of the lymph glands which drain the site of infection. On examination these glands are found to be tender and slightly enlarged. No other glands are involved and pain in the regional glands precedes by a day any definite reference on the part of the patient to the site of infection. Then a painful, swollen and inflamed papule appears at this point. This papule subsequently breaks down, liberating a necrotic core or plug, leaving an ulcer about three-eighths of an inch in diameter with raised edges and having a punched out appearance. This persists for several weeks. On healing the ulcer is replaced by scar tissue. The lymph glands proceed to suppuration in about half the cases. Those which do not break down remain hard, palpable and rather tender for two or three months before gradually returning to normal. Weakness, loss of weight, recurring chills, sweats and prostration are often noted during the active stage of the disease, which lasts two or three weeks. Fever is always present during this period and characteristically shows a remission several days after onset to be followed by a secondary rise to the original height, after which there is a gradual decline to normal. During the febrile period the leucocyte count is slightly to moderately increased and may reach 14,000, but is of no diagnostic value. The convalescence is slow and the patient rarely returns to full-time work in less than two to three months. Complete recovery, however, is the rule and the mortality is less than 5 per cent.

The oculoglandular and typhoidal types follow the same general course in regard to the systemic manifestations.

The most common complications are bronchopneumonia, acute pleurisy, meningitis, peritonitis and appendicitis.

Final diagnosis is made on the basis of agglutination reaction since this method has proved satisfactory and handling of cultures and infected material dangerous to laboratory workers. The agglutination is negative in the first week, becomes posi-

tive usually during the second week, attains its maximum titre in the 5th, 6th or 7th and begins to fall in the 8th week. So far as is known one attack confers immunity in man. There is no specific treatment. Rest in bed is most important and it has been advised that the enlarged glands be incised only when a very evident soft thin place appears in the skin overlying the glands.

In Virginia the reported cases reached their peak in 1932 with 105 cases, when it was suggested that the increased prevalence was due to a greater use of wild rabbits as food during the period of economic depression. In 1933 there were seventy-eight cases and up to the first of October in 1934, twenty-seven cases, eleven of which were in January. However, in 1933 over 50 per cent of the cases occurred in the last three months of the year so the number of cases this year may yet equal last year's record.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

The Alexandria Meeting.

A pre-convention board meeting was held at a breakfast at The Anchorage Tea Room, Wednesday morning, October 10th.

The Auxiliary met at the Belle Haven Country Club on Wednesday morning. At this time, Mrs. J. Allison Hodges and Mrs. Southgate Leigh were honored by being made life members of the Auxiliary. After the meeting, a delicious luncheon was served at the Club, with the Alexandria Auxiliary as hostess.

Wednesday afternoon, there was a drive to Arlington.

One of the most delightful events of the convention was the tea given on Wednesday afternoon. The Alexandria Auxiliary entertained the visiting Auxiliary members at a beautiful tea in the lovely home of Mrs. H. A. Latane. Mrs. Latane was assisted in receiving by Mrs. William Lett Harris, President of the State Auxiliary.

On Wednesday evening, October 10th, at nine o'clock the Alexandria Auxiliary was hostess to the visiting physicians and their wives at a reception at Gadsby's Tavern. The reception room was beautifully and artistically decorated with enormous bowls of dahlias and autumn leaves, and the strains of the more familiar songs of long ago were played during the evening by a string quartet. In the receiving line were Mrs. Robert Tomlinson, President of the National Auxiliary, Mrs. Southgate Leigh, President of the Southern Auxiliary, Mrs. William Lett Harris, retiring President of the Virginia Auxiliary, Mrs. Joseph Bear, new President of the Virginia Auxiliary, Mrs. Llewellyn Powell, President of the Alexdria Auxiliary, Mrs. G. T. Klipstein, Chairman of Entertainment, Mrs. W. T. Burch, Chairman of Reception, and Mrs. J. Allison Hodges, of Richmond. The atmosphere of Gadsby's Tavern is permeated with the history of the past. In the panelled rooms of this old Inn George Washington, George Mason, Marquis de Lafayette, Baron de Kalb, John Paul Jones and Ann Warren, "ornament of the American stage," were once familiar figures. It was here that the famous "Birthnight Balls" honoring Washington's birthday were held, and attended by General and Mrs. Washington. Three floors of rare and exquisite pieces of antique furniture furnish the tavern. A reception at any place with such gracious and hospitable hostesses would have been a delightful affair, but the reception at Gadsby's Tavern was one of those rare experiences which are cherished in the mind among treasured memories.

Thursday morning was taken up with a sightseeing trip of the most interesting places in Alexandria. It was felt by all going on this tour that Alexandria is one of the most charming spots in Virginia.

Thursday noon a luncheon was given at the Army and Navy Country Club, with Mrs. Tomlinson, of Wilmington, Delaware, president of the National Auxiliary, and Mrs. Southgate Leigh, Norfolk, president of the Southern Medical Auxiliary, as the honored guests. Several officers of the Medical Society of Virginia had also been invited to attend. Mrs. Harris presided and called upon each doctor

present for remarks which they gave most wittingly. Mrs. Tomlinson and Mrs. Leigh were introduced by Mrs. J. Allison Hodges. Mrs. Tomlinson stressed the importance of the meeting of the American Medical Association in Atlantic City in June. The Canadian doctors and their wives will be the guests of the Association, and it is to be the largest medical meeting ever held in the world. Mrs. Leigh invited all of the members to be at the meeting of the Southern Medical Association in San Antonio in November.

Mrs. M. N. King, parliamentarian, installed the new officers. A rising vote of thanks was given for the splendid work done by the officers of the past two years with Mrs. William Lett Harris as president.

Mrs. Joseph Bear, Richmond, the new president, gave a most inspirational address.

The meeting was then adjourned until next year.

New Officers, Directors and Chairmen of Committees.

At the meeting of the Woman's Auxiliary to the Medical Society of Virginia in Alexandria, in October, Mrs. Joseph Bear, Richmond, succeeded to the presidency. Officers elected at this time are:

President-Elect—Mrs. Fletcher J. Wright, Petersburg.

Vice-Presidents—Mrs. Meade Edmunds, Petersburg; Mrs. T. Elmore Jones, Portsmouth; Mrs. W. S. Snead, Newport News; Mrs. Hawes Campbell, Enfield.

Recording Secretary—Mrs. James B. Stone, Richmond.

Corresponding Secretary—Mrs. W. Ambrose McGee, Richmond.

Treasurer—Mrs. Reuben F. Simms, Richmond.

Parliamentarian—Mrs. Lee E. Sutton, Richmond.

Directors—Mrs. Southgate Leigh, Norfolk; Mrs. F. W. Upshur, Richmond; Mrs. J. Allison Hodges, Richmond; Mrs. Wm. Lett Harris, Norfolk.

STANDING COMMITTEES

Organization Chairman—Mrs. Fletcher J. Wright, Petersburg.

Assistant Chairmen—Mrs. Meade Edmunds, Petersburg; Mrs. T. Elmore Jones, Portsmouth; Mrs. W. S. Snead, Newport News; Mrs. Hawes Campbell, Enfield; Mrs. Franklin Wilson, Norfolk.

Junior Organization Chairman—Mrs. Franklin Wilson, Norfolk.

Program and Health Education—Mrs. C. C. Smith, Norfolk.

Finance—Mrs. James K. Hall, Richmond.

Legislation—Mrs. Thos. W. Murrell, Richmond.

Public Relations—Mrs. F. J. Wampler, Richmond.

Hygeia—Mrs. Herbert Jones, Petersburg.

Revisions—Mrs. Eugene Lowenberg, Norfolk.

Press and Publicity—Mrs. W. T. Sanger, Richmond.

Printing—Mrs. Lee E. Sutton, Richmond.

Courtesy—Mrs. M. N. King, Norfolk.

Historian and Archives—Mrs. J. Allison Hodges, Richmond.

Exhibit—Mrs. H. M. Snead, Petersburg.

Jane Todd Crawford Memorial—Mrs. F. P. Barrow, Portsmouth.

An Invitation.

The Woman's Auxiliary to the Southern Medical Association will meet in San Antonio, Texas, November 13th to 16th.

Headquarters for the women will be in the St. Anthony Hotel where all meetings and functions will be held.

It is earnestly desired that our women of the South will make every effort to attend this meeting "en masse." Your presence will not only help the meeting but will be a great inspiration to you. San Antonio is delightful and everything possible is being done to make your visit enjoyable.

A cordial and pressing invitation is extended to everyone to attend the Auxiliary Luncheon on Wednesday, November 14th, to meet Mrs. Robert Tomlinson, National Auxiliary President, and other distinguished guests.

MRS. SOUTHGATE LEIGH, *President.*

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Abbott Laboratories.

Ophthalmic Ointment Butyn 2 per cent and Metaphen 1:10,000.

Don Baxter Intravenous Products Corporation.

Dextrose Solutions 2½ per cent, 5 per cent, 7½ per cent, 10 per cent and 25 per cent in Half-Size Vacoliter Containers.

Dextrose 2½ per cent, 5 per cent, 7½ per cent and 10 per cent in Physiological Sodium Chloride Solution in Half-Size Vacoliter Containers.

Cheplin Biological Laboratories, Inc.

Cheplin's Ampoules Dextrose (d-Glucose) U. S. P., 50 per cent, 50 c.c. (Buffered).

Cheplin's Ampoules Dextrose (d-Glucose) U. S. P., 50 per cent, 50 c.c. (Unbuffered).

Cheplin's Ampoules Dextrose (d-Glucose) U. S. P., 10 Gm., 20 c.c. (Buffered).

Cheplin's Ampoules Dextrose (d-Glucose) U. S. P., 50 Gm., 100 c.c. (Buffered).

Cheplin's Ampoules Dextrose (d-Glucose) U. S. P., 50 Gm., 100 c.c. (Unbuffered).

Eli Lilly & Company.
Diphtheria Toxoid, Alum Precipitated (Refined)—Lilly.

Parke, Davis & Co.
Normal Horse Serum—P. D. & Co., one 1 c.c. rubber stoppered vial packages.
Rabies Vaccine (Cumming), seven vial packages.
Scarlet Fever Streptococcus Toxin for the Skin Test—P. D. & Co., one 10 c.c. vial package.

Reinschild Chemical Co.
Agar-Agar Shreds.

Frederick Stearns & Co.
Neo-Synephrin Hydrochloride Emulsion (Aromatic).
Procaine-Neo-Synephrin Hydrochloride Hypodermic Tablets.

E. R. Squibb & Sons.
Refined Diphtheria Toxoid Alum Precipitated—Squibb, ten 0.5 c.c. vial packages.

United States Standard Products Co.
Diphtheria Toxoid, Alum-Precipitated (Refined).
Erysipelas Streptococcus Antitoxin (Refined and Concentrated).
Dextrose Solution, 25 Gm., 50 c.c.
Dextrose Solution, 50 Gm., 100 c.c.

Abbott Laboratories
Bismuth Subsalicylate with Butyn—D. R. L.
Ampoules Procaine Hydrochloride Solution 10%, 2 c.c.
Ampoules Procaine Hydrochloride Solution, 2%, 5 c.c.
Procaine-Epinephrine Solution, 100 c.c. Bottle.
Procaine Hydrochloride Hypodermic Tablets ⅓ grain.
Procaine Hydrochloride Hypodermic Tablets 3 grains.

Cutter Laboratory
Solution Dextrose—U. S. P., 25 Gm., 50 c.c. in Bottles.
Solution Dextrose—U. S. P., 50 Gm., 100 c.c. in Bottles.
Solution Dextrose—U. S. P., 5% in Saftiflask Containers.
Solution Dextrose—U. S. P., 10% in Saftiflask Containers.

National Drug Company
Rabies Vaccine (Human) Chloroform Killed.
Refined Tetanus Toxoid (Alum Precipitated).

Parke, Davis & Co.
Capsule Ortal Sodium ¾ grain (0.05 Gm.)

Ucoline Products Co.
Ucoline Cod Liver Oil Concentrate.
Ucoline Cod Liver Oil Concentrate Tablets.

Winthrop Chemical Co., Inc.
Duotal Tablets, 5 grains.

Abbott Laboratories
Mixed Ragweed Pollen Extract Decimal Dilution Set.

Mallinckrodt Chemical Works
Hippuran
Hippuran (Crystals) 12 Gm. vial
Sterile Solution Hippuran 25 c.c. size

Wm. S. Merrell Company
Diothane
Diothane Crystals
Diothane 10% Solution

Parke, Davis & Co.
Ampoules Thio-Bismol, 2 Gm.
Tuberculin for the Mantoux Test

S. M. A. Corporation
Carotene—SMACO
SMACO Carotene in Oil
SMACO Carotene with Vitamin D Concentrate in Oil
SMACO Vitamin D Concentrate in Oil
SMACO Carotene and Vitamin D Concentrate in Cod Liver Oil

Winthrop Chemical Co., Inc.
Diodrast
Diodrast Sterile Solution (35 per cent, weight/volume), 10 c.c. size
Diodrast Sterile Solution (35 per cent, weight/volume), 20 c.c. size

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R.

Stevenson's Mineral Oil Co.
Stevenson's Heavy Russian Mineral Oil (Mint Flavored)

Don Baxter Intravenous Products Corp.
Physiological Sodium Chloride Solution in Half-Size Vacoliter Containers.

Merck & Co., Inc.
Amidopyrine—Merck.

Book Announcements

Post-operative Treatment. By GEORGE SANFORD FOSTER, M. D., Surgeon to the Lucy Hastings Hospital, Manchester, N. H. Forewords by Horace Binney, M. D., and John C. Rommel, M. D. The Christopher Publishing House. 1933. Octavo of 323 pages with 18 illustrations. Boston, Massachusetts. Cloth. Price, $5.00.

This carelessly edited book contains little that is new and much that has been discarded in the treatment of surgical conditions. Its chief value is found in the frequently repeated but often neglected truism, "It should always be remembered that the patient is the most important person in the hospital." There is no index.

HARRY J. WARTHEN, M. D.

The Langhan's Cellule Aberrated in the Specific Cellule of Cancer. The Matrix Embryonic Cellule of the Primal Syncytium, The Langhan's Cellule: Its Great Importance Throughout Life; Especially in the Early Days of Ovum Life. The Cohenheim Theory. The Cellulettes. Syncytioma. The Pre-Cancerous Carcinoids. Teratomata. An illustrated Review of Some Primal Embryology, 2-8th Week, Including the Normal and Abnormal Cancer Cellule. By FRANK A. STAHL, M. D., Rush, 1887. Chicago, Ill. Octavo of 153 pages. Illustrated. Paper.

Virginia Medical Monthly

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WYNDHAM B. BLANTON, M. D., *Editor*
AGNES V. EDWARDS, Richmond, *Business Manager*

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 1200 East Clay Street, Richmond, Va.

This journal is not responsible for the opinions and statements of its contributors.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

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VOLUME 61 NOVEMBER, 1934 No. 8

Editorial

The Education of Nurses.

After eight years of study the Committee on Grading of Nursing Schools has made its report in the form of a book of some 268 pages, entitled *Nursing Schools Today and Tomorrow.* The American Nurses Association from its headquarters in New York City, commenting on this report in a recent press release, briefly summarizes the difficulties confronting the profession as due to "overproduction" and "undereducation." Some interesting figures are advanced in support of each contention and some rather harsh things are said about certain types of training schools now engaged in the preparation of nurses for their professional career. It is a report physicians as well as nurses will do well to read.

Few will take issue with the statement that the supply of nurses is at present greatly in excess of the demand, but no one appears to know how many nurses are needed for the care of the American people under normal conditions. Certainly 288,000 nurses are too many to earn their support under prevailing conditions, but there is no evidence to show that that number is too large ideally for the good of the sick or for our social work needs. Whether or not lower charges and shorter hours would relieve the situation remains to be proven.

The position taken by the report that there is under-education of nurses appears to be less tenable. It is not apparent that the average nurse needs more education than she is at present getting. It is probably safe to say that 90 per cent of the nursing required of the profession can be well done by women trained as nurses now are trained. The care of the sick in their homes as well as routine hospital nursing does not make greater demands upon the average nurse's fund of knowledge than she is able to meet. Reasonable intelligence, honesty, neatness, patience, kindliness, diligence, tact, and taciturnity go a long way toward the making of the ideal nurse. Miss Nightingale's requirements were no higher. These qualities are not acquired or necessarily perfected by long years of training. If they are not possessed by the candidate at the start, education can do little to make a good nurse.

We are not forgetting that special demands are frequently made upon the nursing profession and that special talent and special training are then needed. Administrative, technical and teaching positions, as well as the public health and social services are inviting fields which women trained in nursing schools are qualified to enter. But only a small fraction of the profession can look forward to this type of employment. The great majority of nurses will not undertake it and hence have no need of the special training it demands. Higher entrance requirements and longer terms of study should not be imposed upon them.

It appears that the time is ripe for the recognition of two classes of nurses—one constituting the great body of the profession for which present educational requirements are probably adequate (it has been suggested that their time of training might

actually be reduced with profit), and another to be made up of an upper stratum of better prepared women who in addition to the regular course would have open to them courses of training designed to fit them for positions of greater responsibility and trust. Perhaps this type of training might be centered around the medical schools, while the smaller hospitals, as long as they meet certain minor legal requirements, might continue to conduct training schools as they have for years.

The President.

Among the proceedings of the Medical Society of Virginia none is more important than the annual induction into office of a new president into whose hands the destiny of the Society is committed for the next twelve months. Francis H. Smith to whom the honor belongs this year was born in Lexington, Virginia, April 12, 1881. Before he was ten years old he had made up his mind to become a physician, receiving his inspiration from the family doctor. It is said that on a certain stormy night when he and a smaller brother plowed their way through the snow to summon Dr. Samuel W. Dickinson of Marion, to a case, he first confessed this ambition, and from it he never wavered. With this in mind he matriculated at Fredericksburg College, graduating in 1899. The next year he entered the University College of Medicine, and on graduating four years later accepted the position of resident physician at St. Luke's Hospital, Richmond. His choice of a location fell to Lewisburg, West Virginia. Here in the beautiful Greenbrier Valley he led the life of the general practitioner until invited by Dr. George Ben Johnston and Murat Willis, a friend of his boyhood, to assume charge of a hospital in Abingdon. The growth of that hospital under his wise direction in association with men of like ambitions and ideals, as well as the establishment of the George Ben Johnston Memorial Clinic, are but a part of the recognition that has come to him in Southwest Virginia. For a number of years he has represented the Ninth District as a member of the Council of the Medical Society of Virginia and served on the State Board of Medical Examiners. The Medical Society of Virginia has every reason to expect the same high type of service and devotion to principle which Dr. Smith has displayed in every other enterprise with which he has been identified.



FRANCIS H. SMITH, M. D.,
President, Medical Society of Virginia.

Dr. Dodson's Book.

One would have to go a long way to find a better book for its purpose than the *Synopsis of Genito-urinary Diseases* by Austin I. Dodson of Richmond, just issued from the press of C. V. Mosby Company, St. Louis. Into fewer than 300 pages the author has compressed the essential facts of his specialty, properly emphasizing etiology, pathology, and diagnosis. Of special interest to medical men are the sections dealing with urological diagnosis, prostatic massage, prostatism, urinary calculi, and tuberculous and non-tuberculous infection of the urinary tract.

No one can read Dr. Dodson's book without learning a great deal. He has admirably condensed a large fund of information into a compact and readable book, which should prove not only useful to the medical student but highly helpful to the busy practitioner as well.

A New Pierian Spring.

The Modern Home Physician is advertised as a book of 776 pages, 932 pictures, and 2,000 articles which can be bought for three dollars and fifty cents and claims to stand "apart from everything in its field, unequalled for up-to-the-minute completeness, scientific accuracy and authority, plain-spoken, non-technical helpfulness, profuse illustrations, out-and-

out everyday usefulness, and astonishingly low cost."

"Here at last," the prospectus announces, "is a complete, authoritative easy-to-understand explanation of all common diseases—how to avoid them, their symptoms, and how to recognize them, the right way to treat them. Also full information on how to live to keep well."

The prospectus waxes enthusiastic: "What a help and comfort it will be to have a reliable authority in the house that will enable you to tell whether you need the Doctor and what simple home methods to follow till he comes. No more risk of overlooking possible dangerous conditions. No more heart-sickening worry over simple things easily taken care of. No more feeling of utter helplessness if the Doctor is delayed in coming. This wonderful new book is packed with the kind of information you would give anything for when you need it. . . . This great book gives complete information about every organ and system in the body and how it works. Guidance in the proper care of the body and warnings against the things that are harmful. Full details of diets, exercise, hygiene, childbirth, glands, weight, blood pressure, and hundreds of other subjects that concern everyone. Thumb-notch indexed so that you can find things instantly—even in the excitement of a sudden illness or accident."

Recollections of former works of this character crowd the memory: John Wesley's *Primitive Physic;* Thomas Ewell's *American Family Physician* and his *Letters to Ladies;* James Ewell's *The Planter's and Mariner's Medical Companion;* Buchan's *Family Physician;* Tissot's *Advice to People in General with Regard to their Health; The Poor Planter's Physician;* Smith's *Compleat Housewife;* Tennent's *Everyman His Own Doctor;* and Jenning's *The Married Ladies' Companion or Poor Man's Friend.* All of these books appear to have been written with striking singleness of purpose. They each essay, as their titles indicate, the impossible task of making every man his own doctor.

One wonders how long it will be—to paraphrase the words of Bryant—before this *Modern Home Physician* will join that innumerable caravan which moves to that mysterious realm where each must take his chamber in the silent halls of oblivion.

Virginians to the Front.

A few months ago M. Pierce Rucker was signally honored by the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons who made him their president, and at about the same time J. Shelton Horsley was elected president of the American Association for the Study of Neoplastic Diseases. Shortly before Robert C. Bryan was similarly honored by the American Association of Genito-urinary Surgeons. We now have a fourth example of good taste. The American Roentgen Ray Society has just made Fred M. Hodges its president for the ensuing year. Virginians will be pardoned some expression of pride in this recognition of Virginia doctors by national medical societies in this country.

George W. Eutsler.

The educational program of the Society has sustained a real loss in the resignation of its executive secretary, Mr. George W. Eutsler. It should be known that throughout the years he served the Department of Clinical Education, thanks to the generosity of the Extension Division of the University of Virginia, his services have been made available to the Society without cost. Much of the success of our venture in the teaching of obstetrics and prenatal care of expectant mothers is due to the faithful, able, and energetic manner in which he has organized and popularized this novel and highly commendable undertaking. The Medical Society of Virginia is grateful to him and wishes him well in his new field of endeavor.

We are glad to learn that Mr. G. Baskerville Zehmer, director of the Extension Division, has graciously come to the rescue and is now giving this extension education of our physicians his personal attention.

President's Message

Greetings:

TO THE MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA:

My best wishes for a prosperous and progressive year for organized Medicine in Virginia! To this end we should complete our organization at once and, especially, we should make a determined effort to enlist every eligible physician of the State in our membership.

There are now many physicians eligible for membership in the Medical Society of Virginia who are not members. There are, at least, 150 members of component societies who have not joined the State Society. Everyone of these physicians and many who do not belong even to the component societies should be induced to exercise their right and privilege of society membership.

Hence, the first appeal I shall make is that the several councilors and secretaries of component societies will put on drives to persuade all eligible physicians within their jurisdictions to become members, both of their local societies and of the State Society. Today more than ever before we should realize that in "union there is strength."

Closely connected with the necessity for increasing membership is the state of the Society's treasury. For the last several years the Medical Society of Virginia through action of successive sessions of its House of Delegates has been appropriating money much beyond its income, until now available reserves, once $12,000, have been reduced to about $2,000. The last House acted very wisely in adopting a definitely curtailed budget within our expected receipts, and then consistently voted down every plea for additional appropriations. It shall be the policy of the present administration to live within our means, if it is at all possible. Every committee should bear in mind that, should it exceed its budget, the committee does so at its own risk.

As for committees, the House of Delegates takes the position that a "special committee" is appointed to perform a special function, when it should be discharged. Hence it discharged all present special committees properly so called.

There have been several committees listed as "special committees" which have been improperly so-called. They are, in fact, standing committees, though neither the old nor recently revised By-Laws list them as such. I refer to the Walter Reed Commission, the Advisory Board of the Woman's Auxiliary, the Committee on Trust Fund for Post-graduate Education, and, probably, the Committee of Group Societies. These several committees have permanent duties and consequently have been retained.

A motion was passed by the last House appointing a committee to protect physicians against demands made upon them by Insurance Companies and others for services without pay. It does not seem necessary to appoint a special committee for this purpose so long as one of your standing committees can very properly handle the matter. I, therefore, refer this matter to the Ethics Committee.

Without further explanation, really unnecessary if the Constitution and By-Laws be consulted, I appoint the following committees, confidently expecting each committeeman to accept the appointment and exert his best efforts in this field of service:

STANDING COMMITTEES

(The numbers after names indicate the length of term of office.)

PUBLICATION AND PROGRAM: Dr. Wyndham B. Blanton (3); *chairman;* Dr. J. H. Neff (1); Dr. H. A. Tabb (2).

SCIENTIFIC EXHIBITS AND CLINICS: Dr. C. B. Morton (2), *chairman;* Dr. J. L. Wright (1); Dr. J. D. Willis (3).

DEPARTMENT OF CLINICAL AND MEDICAL EDUCATION: Dr. R. D. Bates, *chairman;* Dr. I. C. Riggin; Dr. J. C. Flippin; Dr. Lee E. Sutton; Dr. G. F. Simpson; Dr. P. W. Miles.

LEGISLATION: Dr. Frank S. John (2), *chairman;* Dr. W. L. Powell (1); Dr. H. T. Smith (3).

MEDICAL ECONOMICS: Dr. A. F. Robertson, Jr. (3), *chairman;* Dr. M. H. Harris (1); Dr. C. O. Dearmont (2).

MEMBERSHIP: Dr. J. A. White (3), *chairman;* Dr. Isaac Peirce (1); Dr. A. W. Hammond (2).

ETHICS: Dr. J. C. Flippin (2), *chairman;* Dr. J. A. Owen (1); Dr. W. R. Williams (3).

OTHER COMMITTEES

WALTER REED COMMISSION: Dr. Clarence Porter Jones, *chairman;* Dr. James D. Clements; Dr. Beverley R. Tucker.

GROUP SOCIETIES: Dr. Southgate Leigh, *chairman;* Dr. J. M. Holloway; Dr. D. M. Kipps; Dr. J. A. Grizzard.

ADVISORY BOARD TO WOMAN'S AUXILIARY: Dr. J. Allison Hodges, *chairman;* Dr. Southgate Leigh; Dr. Hugh H. Trout.

TO ADMINISTER TRUST FUND FOR POSTGRADUATE CLINICAL EDUCATION: Dr. R. D. Bates, *chairman;* Dr. J. Bolling Jones, Dr. J. Allison Hodges, Dr. I. C. Harrison; Dr. J. C. Flippin.

F. H. SMITH, *President,*
Medical Society of Virginia.

Department of Clinical Education of the Medical Society of Virginia

Future of Department of Clinical Education Assured.

For about five years the Department of Clinical Education of the Medical Society of Virginia has functioned as a special committee of the Society. So comprehensive has been its work that, in the revision of the Constitution and By-Laws of the Society, this year, it was deemed expedient to merge the work of this Department with that of the standing committee on Medical Education and Hospitals, as the formation of the Department of Clinical Education was based on a recommendation of that Committee and it has functioned successfully on this basis. The new standing committee has been named the Department of Clinical and Medical Education.

Instead of being appointed as are other standing committees, the personnel of the Department shall consist of the immediate ex-president of the Society who shall be chairman, the State Health Commissioner, one member each from the two medical schools of the State, and two members from the State-at-large, the last four to be appointed by the incoming president. This year these members are Dr. R. D. Bates, chairman, Dr. I. C. Riggin, Dr. J. C. Flippin, Dr. Lee E. Sutton, Dr. G. F. Simpson and Dr. P. W. Miles.

The function of the Department as stated in the By-Laws is to endeavor to bring about cooperation of the Society with the medical schools, hospitals, clinics and other teaching institutions of the State, with the idea of maintaining the highest standards in these institutions and to use every means to encourage and advance medical science, and bring it within easy reach of the post-graduate practitioners of the State.

While the Society did not feel financially able to make as substantial appropriation for the work of the Department for the coming year as for the past two years, it did appropriate $250.00 for a continuance of postgraduate educational activities, and this appropriation, with the balance on hand and assistance from the Extension Division of the University of Virginia, and the additional help which will come through fees from doctors attending clinics, will make it possible for the Department of Clinical and Medical Education to conduct a few clinics and to assist local societies in arranging additional programs.

Dr. Bates Makes First Contribution to Postgraduate Education Trust Fund.

At its 1930 meeting, the Medical Society of Virginia adopted an amendment to its Constitution, designating the last five living ex-presidents of the Society as a committee to collect and hold in trust the postgraduate fund of the Society. Times have not been propitious for soliciting contributions to such a fund in recent years, but we are sure members of the Society will be interested in knowing that a beginning has at last been made and that $15.00 has been received as the first donation to this fund. This contribution comes from the present Chairman, Dr. R. D. Bates, and is testimony of his interest and devotion to the cause. We hope other donations may be forthcoming.

Extracts from Report of Dr. Maxwell E. Lapham, Field Clinician, to the Joint Committee on Prenatal and Postnatal Instruction.

The program of the Joint Committee on Prenatal and Postnatal Instruction has just been completed after nearly two and one-half years of continuous

work. It would be eminently desirable to measure whatever success this work has enjoyed in terms of definite improvement in the practice of obstetrics in the State, as regards maternal and neo-natal morbidity and mortality. However, this is an impossibility since there has been but little appreciable change in maternal mortality in the United States in the past thirty years for some reason, in spite of definite improvement in teaching the subject, and in spite of generally improved economic conditions during that time.

Success of the program can be measured in other ways than in terms of mortality statistics. One would assume that if the profession were sufficiently interested to continue this work through the State Medical Society's action for one and a half years after the first year's experiment, that the physicians felt they were profiting by this program. There has been an average continued attendance of 76 per cent of the enrolled men in classes. During the entire time there was an average of nearly two clinic and private patients seen for each meeting held. The questionnaires sent out by the Committee regarding reaction to the course and its efficacy brought answers from about one-half of the members who stated almost unanimously that they had benefited by the course. Further, the personal statements of many men to me that they have realized their shortcomings and are trying to improve, and the public admission of mistakes make me feel that not only are many men making honest efforts to improve their practices, but that their personal morale and the *esprit de corps* of groups has been greatly improved by these meetings.

The method of instruction has remained essentially the same throughout the courses—consisting of a series of lectures on practical subjects in obstetrics, a period for discussion, and the presentation of clinical patients, if there were any. The remaining time was given to personal interviews and private consultations with physicians if they desired to have me. This part of the work was always emphasized at the beginning of each circuit so that every man should have felt at liberty to call upon me at any time I was available. During the two and a half years 593 private patients were seen and discussed with physicians, and 304 clinic patients were presented to the groups.

The physicians' use of my time varied considerably in different localities. Some groups used me much more than others in consequence. In general, the rural and small town physicians called upon me more often than the urban physicians. Distances to be covered in some circuits necessarily prevented large numbers of consultations, but there was rarely a time when I could not have seen patients if I had been asked. Of course clinic patients were seen in greater numbers in the centers where meetings were held in large hospitals than in the rural sections, but there were several rural groups which provided clinical material in rather large numbers depending upon the interest of the local organization and upon the cooperation of community nurses. The list of circuits, describing roughly the part of the State covered by each, shows the incidence of consultations and clinic patients.

	Consultations	*Clinic Patients*
Charlottesville and lower Shenandoah Valley	67	31
Eastern Shore (Short Course)	9	3
Richmond and Southside	75	81
Roanoke—Wytheville	61	3
Norfolk and Southeast Virginia	47	34
Bedford (Short Course)	10	5
Southwest Virginia (Extreme)	73	14
Southwest Virginia (Bristol-Tazewell)	104	18
Danville (Southside)	36	13
Clifton Forge (Short Course)	13	2
Richmond and Mid-Tidewater	56	60
Shenandoah Valley	22	6
Northern Virginia	20	7

It would seem after a two and half year trial of this type of postgraduate education that it has proved its worth. It has been an unique experiment and seems to offer one particular advantage over other types of postgraduate instruction, namely, that it reaches some men who are not able to get away from their work, or who do not go for postgraduate work because of the effort or the time and the expense required. However, regardless of the locality—whether rural, small town or urban—the men who have been most cooperative have been the ones who least needed postgraduate study. How this can be remedied is difficult to say, but a more concerted effort might be made to have everyone attend a course at least once in the hope that he will remain.

The success of the entire program has largely been due to the excellent organization of the work by the Extension Division of the University of Virginia under the supervision of Mr. George Zehmer and Mr.

George Eutsler, the Secretary of the Joint Committee and active organization agent. Without this cooperation the work would have been much less successful from its beginning. The unquestioned support and backing of the entire Committee was of great help to me, and their apparent belief in my ability allowed me to carry on the work very much as I had conceived it myself. That I was allowed to do this made me more careful of my position as instructor and made me feel my responsibility to the Committee more keenly, lest I bring criticism upon them by my teaching.

Postgraduate Clinic at University of Virginia Hospital.

The fourteenth in the series of postgraduate clinics conducted by members of the medical faculty of the University of Virginia will be held at the University of Virginia Hospital Friday, November 16th.

PROGRAM

9:00- 9:30 A.M.—Registration, University of Virginia Hospital.

Morning Sessions:

9:30-10:00—Medical Clinic. Dr. J. C. Flippin.
10:00-10:10—Discussion.
10:10-10:40—Agranulocytosis. Dr. H. B. Mulholland.
10:40-10:50—Discussion.
10:50-11:20—Laboratory Diagnosis of Anemia. Dr. W. E. Bray.
11:20-11:30—Discussion.
11:30-12:00—Diagnosis and Treatment of the Commoner Affections of the Eye. Dr. H. S. Hedges.
12:00-12:10—Discussion.
12:30- 1:30—Lunch.

Afternoon Sessions:

1:30- 3:30—Ward Rounds—
Orthopedics. Dr. R. V. Funsten.
Internal Medicine. Drs. J. C. Flippin and J. E. Wood.
Neurology and Psychiatry. Dr. D. C. Wilson.
Dermatology and Syphilology. Dr. D. C. Smith.
3:30- 4:30—Appendicitis in Children. Dr. W. H. Goodwin.
4:30- 4:40—Discussion.
4:30 —Round Table.

To provide more satisfactorily for the convenience of its guests, the University committee requests notices in advance from those who plan to attend. These notices should be sent to the chairman of the committee, Dr. L. T. Royster, University of Virginia Hospital, University, Va.

G. BASKERVILLE ZEHMER,
Executive Secretary.

Proceedings of Societies

Richmond Academy of Medicine.

The Section on the History of Medicine of the Academy had charge of the meeting on the evening of October 23rd. At this time, there was an exhibit of books, manuscripts, and pictures of Virginia doctors, from the 17th to the 20th century, shown in the Library rooms. Included in the exhibit which was open for the week was an interesting group of books on medical botany; books by noted teachers of medicine including what is believed to be a complete collection of the works of Robley Dunglison, first professor of medicine at the University of Virginia; a collection of medical journals published in Virginia; and a number of theses of Virginia students of medicine at Edinburgh and the University of Pennsylvania. In addition to the books owned by the Academy, books were loaned by the Army Medical Library of Washington, the State Library and the Medical College of Virginia. The guests of honor were entertained at dinner in the Academy Building by the doctors who are members of this special section and the wives of these doctors were also invited. The regular meeting, at 8:30 P. M., included papers by Dr. Wyndham B. Blanton, Richmond, on Mad Stones in Virginia; Dr. Hugh H. Trout, Roanoke, Va., on A Few Instances in the Early Life of Ephraim McDowell; and Dr. Stewart R. Roberts, Atlanta, Ga., on The Medical Aspects of the Andersonville Prison. Following this program an informal buffet supper was served all members and visitors.

The Southwestern Virginia Medical Society

Held its semi-annual meeting in Radford, Va., September 21st, with an attendance of fifty-five. The meeting was opened with a luncheon at St

Alban's Sanatorium with the members as guests of Drs. J. C. and James P. King. Interesting papers were presented at the scientific meeting by Drs. P. D. Stout, Bristol; Thos. N. Spessard, Roanoke; Wm. K. Lloyd, A. M. Showalter and J. A. Davis, Jr, Christiansburg; W. W. S. Butler, Jr., and Littleton Davis, Roanoke; and Booker Lee, Pulaski.

At the business session, several new members were elected and the following officers were chosen for the coming year: President, Dr. Beverley F. Eckles, Galax; vice-president, Dr. W. R. Whitman, Roanoke; and secretary-treasurer, Dr. H. W. Bachman (re-elected), Bristol. The following were elected to membership: Dr. J. Stuart Staley, Marion; Dr. F. T. Hauser, Bland; Dr. Douglas D. Vance, Bristol; Dr. Philip D. Stout, Bristol; and Dr. S. J. Beeken, Cambria.

The evening session was a banquet at the American Legion Hall, and at this time, Dr. E. M. Chitwood, Wytheville, gave his presidential address on Infections of the Blood Stream. The next meeting will be held in March, 1935, the exact date and place to be named.

The Lynchburg Academy of Medicine

Held its opening Fall meeting on October the 1st, at which time Dr. E. G. Scott presented a paper on Von Gierke's Disease and Dr. H. B. Spencer spoke on X-Ray Therapy. Dr. W. O. Smith, Alta Vista, a former member, was re-elected to membership and Dr. Homer E. Clark, Massies Mill, and Dr. Walter L. Williams, Brookneal, were elected members.

Dr. R. D. Caldwell and Dr. John Hundley, Jr., are president and secretary, respectively.

The Clinch Valley Medical Society

Had its semi-annual meeting at Norton, Va., September 29th, with a luncheon at Hotel Norton between the business and scientific sessions. Dr. J. M. Dougherty, Sr., Nickelsville, president, presided. The following officers were elected for the ensuing year: President, Dr. W. R. Williams, Richlands; vice-presidents, Dr. George W. Botts, Norton, and Dr. W. C. Elliott, Lebanon. Dr. C. B. Bowyer, Stonega, who has been secretary-treasurer since the organization of this Society, was re-elected to this office

At the afternoon session, interesting and instructive papers were presented by the following guests: Dr. William B. Porter and Dr. I. A. Bigger, of the Medical College of Virginia, Dr. I. C. Riggin, State Health Commissioner, and Dr. William Tate Graham, of the McGuire Clinic, all of Richmond.

The Medical Association of the Valley of Virginia

Met in Staunton, Va., September 27th, under the presidency of Dr. E. C. Stuart, of Winchester. The invited guest on this occasion was Dr. F. B. Stafford, Sanatorium, Va., who gave an illustrated talk on Upper Respiratory Infections Simulating Tuberculosis. Several other interesting papers were presented also. The following officers were elected for the ensuing year: President, Dr. Kenneth Bradford, Staunton; vice-presidents, Dr. J. B. McKee, Winchester, and Dr. S. P. Hileman, Millboro; treasurer, Dr. H. G. Middlekauff, Weyers Cave; secretary, Dr. Alex. F. Robertson, Jr., Staunton.

News Notes

The Alexandria Meeting of the Society

Is now a pleasant memory. We feel deeply grateful to the doctors of that city for the splendid work they did for the success of the sixty-fifth annual session of the Medical Society of Virginia. This meeting held under the presidency of Dr. R. D. Bates, of Newtown, was well attended, there being a registration of three hundred and fifty doctors, about one hundred ladies, and a number of visitors.

An excellent clinic was held on Tuesday afternoon by Dr. Thomas R. Boggs, of Baltimore. Dr. Harvey B. Stone, also of Baltimore, who was to have held a clinic in the afternoon and presented a paper in the evening, was prevented by illness from attending, but his paper was read by Dr. Frank S. Johns, of Richmond. Post-convention clinics were held in Washington on Thursday afternoon.

Several special associations held meetings during the time of the State meeting and these with the Medical College of Virginia Alumni dinner added

to the interest of the occasion. Following the Wednesday evening session, there was a reception at Gadsby's Tavern, one of the old landmarks of the city, for all members of the Society and Auxiliary and visitors. This building has a most valuable collection of antique furniture and those who attended the reception spent a most pleasant evening.

Dr. F. H. Smith, Abingdon, succeeded to the presidency; Dr. P. St. L. Moncure, Norfolk, was named president-elect, and Dr. Carrington Williams, Richmond, Dr. S. B. Moore, Alexandria, and Dr. Alex. F. Robertson, Jr., Staunton, vice-presidents. Councilors chosen for the even numbered districts are 2nd, Dr. Julian L. Rawls, Norfolk; 4th, Dr. Wright Clarkson, Petersburg; 6th, Dr. W. L. Powell, Roanoke; 8th, Dr. J. E. Knight, Warrenton. Dr. C. O. Dearmont, White Post, was appointed councilor for the 7th District to fill the unexpired term of Dr. Percy Harris, who, in the redistricting of the State, was transferred to the 8th District.

The invitation of the Norfolk County Medical Society to hold the 1935 meeting in Norfolk was unanimously accepted.

The Virginia Orthopedic Association

Held its annual meeting in Alexandria, Va., at the time of the meeting of the State Society. Dr. W. T. Graham, Richmond, the president, presided. Usual routine matters and subjects of special interest to the orthopedic surgeons were discussed. Dr. Robert V. Funsten, University, was elected president for the coming year, and Dr. B. H. Kyle, Lynchburg, was re-elected secretary-treasurer.

The Virginia Pediatric Society

Held a luncheon meeting in Alexandria in October, during the meeting of the Medical Society of Virginia, Dr. Thomas D. Jones, of Richmond presiding. On this occasion, Dr. W. P. McDowell, Norfolk, was elected president; Dr. Lee E. Sutton, Richmond, vice-president; and Dr. W. Ambrose McGee, Richmond, was re-elected secretary-treasurer.

The Virginia Urologic Society

Was formed by the urological surgeons attending the recent meeting of the Medical Society of Virginia in Alexandria. Dr. John H. Neff, University, was elected president; Dr. J. F. Geisinger, Richmond, vice-president; and Dr. L. D. Keyser, Roanoke, secretary-treasurer. Plans for the future work of this society will be worked out by the officers.

Married.

Dr. Berkeley Hancock Martin and Miss Elizabeth Sydnor McCraw, both of Richmond, Va., September 29th.

Dr. Thomas Blackburn Payne, Fredericksburg, Va., and Miss Virginia Garnett, Gwynedd, Pa., October 20th. Dr. Payne is the son of Dr. and Mrs. Rozbert J. Payne, of Fredericksburg, Va., and is an alumnus of the Medical College of Virginia, class of '31.

Dr. Thomas Edgar Painter, class of '31, Medical College of Virginia, who later interned at Memorial Hospital, Richmond, and Miss Frances Angelina Curtis, Liberty, N. C., October 15th. They will make their home in Williamsburg, Va.

Dr. Fred M. Hodges,

Prominent X-ray specialist of Richmond, Va., was honored by the American Roentgen Ray Society, at its meeting held recently in Pittsburgh, when he was elected president for the coming year. This is the largest organization in this specialty in the world and includes members from all parts of the United States and Canada.

Radiologs.

The Second Series of Radiologs, consisting of twenty selected Radio Talks on Preventive Medicine, has just been published by the State Health Department upon request of the State Department of Education. These talks were given by Dr. W. A. Plecker, State Registrar of Vital Statistics, from WRVA studio in Richmond, Va., and are written in popular style, illustrated by actual occurrences, and are readable and instructive. They have been prepared with special reference to their use in the high schools of Virginia. Owing to the cost of publication, they will be mailed only upon request sent Dr. W. A. Plecker, State Office Building, Richmond, Va.

Dr. John C. McCluer,

Class of '32, University of Virginia, who interned at De Paul Hospital, St. Louis, Mo., and was later resident physician in Camden-Clark Memorial Hospital, Parkersburg, W. Va., has located at 214 North Columbus Street, Alexandria, Va., and is engaged in general practice.

Southern Medical Association.

To those who have attended the annual meetings of the Southern Medical Association, it is sufficient to say that it is to meet in San Antonio, Texas, November 13th-16th, under the presidency of Dr. Hugh Leslie Moore, of Dallas, Texas. Both vice-presidents this year are from this section—Dr. Fred M. Hodges, Richmond, Va., and Dr. Thomas A. Groover, Washington, D. C. There are a number of good hotels in San Antonio and all who attend may be assured of comfortable accommodations. The general sessions, sixteen scientific sessions, eight organizations meeting conjointly and social activities will furnish something of interest for every one. If the advertisement appearing in this issue of the MONTHLY does not give all information desired, write at once to Mr. C. P. Loranz, secretary-manager, Empire Building, Birmingham, Ala.

Dr. Henry B. Showalter,

Who recently completed a residency at George Ben Johnston Memorial Hospital, Abingdon, Va., has located for general practice at Kenbridge, Va., Dr. Showalter is a member of the class of '33, Medical College of Virginia.

Dr. Nelson Mercer,

Richmond, Va., who has the rank of lieutenant colonel in the Medical Corps, Virginia National Guard, was designated by Adjutant General Waller to attend the annual meeting of the Association of Military Surgeons in October, at the Medical Field Service School, Carlisle Barracks, Pa.

Lilly Research Laboratories Formally Opened.

More than a thousand investigators and research workers were present at the formal opening of the new Lilly Research Laboratories, at Indianapolis, on October 11th. The gathering of distinguished visitors, representing many noted bodies and famous institutions in this and foreign countries, assembled in a mammoth tent erected for the occasion adjacent to the Lilly Laboratories.

At the formal opening exercises, in the afternoon, Eli Lilly, head of the Lilly organization, presided as chairman. Mr. J. K. Lilly, chairman of the board of directors, responded briefly on "Research in Manufacturing Pharmacy" from the time of his entrance in the organization in 1876 up to the present.

Following Mr. Lilly's remarks, Dr. Irving Langmuir, director of research for the General Electric Company, discussed "The Unpredictable Results of Research."

Sir Frederick Banting then talked on "The Early History of Insulin." He gave an account of the early experiments conducted by Dr. Best and himself which first demonstrated the existence of Insulin, and expressed his great appreciation of the cooperation which he and his associates had received from the staff of the Lilly Research Laboratories in the development of a practical, large-scale procedure for the production of Insulin.

Sir Henry Dale, director of the National Institute for Medical Research, London, and secretary of the Royal Society, was the last speaker on the afternoon program, his topic being "Chemical Ideas in Medicine and Biology." Sir Henry spoke of the immediate objectives of research in such laboratories as those of Eli Lilly and Company, and of their natural and proper differences from those of the laboratories supported by academic or public endowment.

The afternoon speaking program was followed by an inspection of the new laboratories, the party being divided into small groups in the charge of guides. In the evening a banquet was tendered the out-of-town guests.

The Norfolk & Western Railway Surgeons' Association

Held its eighteenth meeting in Atlantic City, September 26th and 27th, with approximately 150 members present. The president, Dr. M. J. Payne, Staunton, Va., gave an address on Some Newer Aspects of Industrial Surgery. Other Virginians among the speakers were: Dr. W. R. Whitman, chief surgeon of the railway, Dr. M. A. Johnson, Assistant chief surgeon, Dr. J. T. McKinney and Dr. H. B. Stone, all of Roanoke; Dr. A. A. Burke, Norfolk; and Dr. Charles D. Townes, Waverly. New officers elected at this time are: President, Dr. A. de T. Valk, Winston-Salem, N. C.; vice-presidents, Dr. W. H. Teachnor, Columbus, Ohio, and Dr. G. B. Irvine, Williamson, W. Va. Dr. T. D. Armistead, Roanoke, Va., was re-elected secretary. The place and date of next meeting will be named later.

Dr. J. G. Lyerly,

For some time of Richmond, Va., located in Jacksonville, Fla., October 1st, with offices in Suite 405,

Medical Arts Building. His practice will be limited to neurological surgery.

Medical College of Virginia News

The regular scientific monthly meeting of the staff was held October 18th. The program was as follows:

Chronic Subdural Hematoma, by Dr. W. G. Crutchfield.

Recent Developments in the Chemistry of Vitamines, by Dr. J. C. Forbes.

Some New Observations on the Relation of Alveolar Carbon Dioxide, Two Alkaline Reserves and pH of the Blood, by Dr. Frank Apperly.

Dr. J. C. Forbes, associate professor of chemistry, Dr. W. G. Crockett, professor of pharmacy, Dr. Harvey B. Haag, professor of pharmacology, and Mr. A. L. I. Winne, secretary of the State Board of Pharmacy, attended the dedication of the new Lilly Research Laboratories in Indianapolis, Ind., October 11th.

Among the faculty members attending the sixty-fifth annual session of the Medical Society of Virginia, held at Alexandria, October 9th-10th-11th, were President W. T. Sanger, Dean Lee E. Sutton, Jr., Dr. W. B. Porter, professor of medicine, Dr. Harry Walker, associate in medicine, Dr. J. Morrison Hutcheson, professor of clinical medicine, Dr. Beverley R. Tucker, professor of nervous and mental diseases, Dr. Dewey Davis, assistant professor of medicine, Dr. Oscar L. Hite, instructor in medicine, Dr. Harvey B. Haag, professor of pharmacology, Dr. D. G. Chapman, instructor in medicine, Dr. Kinloch Nelson, associate in medicine, Dr. Carrington Williams, associate professor of medicine, Dr. Charles R. Robins, professor of gynecology. Dr. C. C. Coleman, professor of neurological surgery, Dr. W. G. Crutchfield, assistant professor of neurological surgery, Dr. Guy Horsley, instructor in surgery, Dr. H. J. Warthen, assistant professor of surgery, Dr. H. P. Mauck, associate in orthopedic surgery, Dr. Howard R. Masters, associate in nervous and mental diseases, Dr. James P. Baker, instructor in medicine, Dr. William H. Higgins, professor of clinical medicine, Dr. H. H. Ware, Jr., associate professor of obstetrics, and Dr. Greer Baughman, professor of obstetrics. Many of these physicians took part in the program.

President W. T. Sanger and Dean Lee E. Sutton, Jr., will attend the anual meeting of the Association of American Medical Colleges to be held in Nashville, Tenn., October 29th-30th-31st.

During the month of September the outpatient department of the college handled 2,504 patients, making 5,086 patient visits to the various clinics.

Many members of the faculty attended the lecture by Dr. Henry C. Sherman, Mitchell Professor of Chemistry at Columbia University, which was given under the auspices of the Virginia Section, American Chemical Society, October 12th.

Jefferson Medical College.

The 110th annual session of the Jefferson Medical College was inaugurated on the evening of September 24th, at eight o'clock.

Mr. Alba B. Johnson, President of the Board of Trustees, presided. The Introductory Lecture was delivered by Dr. Thomas C. Stellwagen, Professor of Genito-Urinary Surgery, on "Cooperation and Loyalty."

Dr. Ross V. Patterson, Dean, welcomed the 562 members of the student body. The new students consisted of 148 Freshmen and sixteen Juniors.

The members of the First-Year Class were prepared for medical study in sixty-two different institutions and all have received collegiate degrees. There were 550 applicants for admission to the First-Year Class who submitted formal certificates of preliminary education. Approximately 260 applicants with college degrees were declined admission.

Among the members of the Class are sons of seven Jefferson graduates, together with six other relatives of Jefferson graduates. There are seven other sons of physicians, not graduates of Jefferson Medical College.

Geographically, eighteen different States and Insular Possessions are represented, as follows: Maine, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, West Virginia, Ohio, North Carolina, Massachusetts, Georgia, Kansas, Wyoming, Tennessee, Utah, Hawaii, Puerto Rico.

News from Duke University School of Medicine and Duke Hospital.

On October 1st the Duke University School of Medicine and the School of Nursing began their autumn quarters, with a total of one hundred and

ninety-four students in the School of Medicine, and a total of seventy in the School of Nursing.

On October 12th and 13th a postgraduate course in Fractures was held at Duke Hospital by Dr. Alfred R. Shands, Jr. Lectures and demonstrations were given by the following: Dr. Philip D. Wilson, New York City, Dr. William M. Roberts, Gastonia, N. C., Dr. Oscar L. Miller, Charlotte, N. C., Dr. H. Earl Conwell, Fairfield, Ala., Dr. F. A. Hoshall, Charleston, S. C., Dr. J. Warren White, Greenville, S. C., Dr. J. T. Saunders, Asheville, N. C., Dr. Hugh Thompson, Raleigh, N. C., Dr. G. W. Leadbetter, Washington, D. C., Dr. Raymond S. Crispell, Duke Hospital, and Dr Walter F. Cole, Greensboro, N. C. In addition, many fractures, braces and splints were exhibited. Over three hundred physicians from North and South Carolina and Virginia attended. It is probable, on account of the interest shown, that this may be made an annual affair.

Dr. C. C. Cooley,

An alumnus of the University of Virginia, class of '29, has just completed a course at the Postgraduate Hospital in New York City, and has located in Norfolk, Va., for practice in diseases of the eye, ear, nose and throat. He is associated with Dr. A. A. Burke.

Dr. Frank P. Coleman,

Recently engaged in general practice at Stuarts Draft, Va., is taking a course in general surgery at the University of Michigan Hospital in Ann Arbor.

Dr. Ernest L. Stebbins,

Who has been director of the health department of Henrico County, for some time, has tendered his resignation to accept the position of epidemiologist with the New York State Department of Health, at Albany. He will enter upon his new duties on December the 1st.

Seaboard Medical Association of Virginia and North Carolina.

As the annual meeting of this Association is so early in December—the 4th, 5th and 6th—we are again announcing it that those who plan to attend may arrange their work accordingly. The program includes papers by several invited guests as well as by members. The meeting is to be in Kinston, N. C., this year, under the presidency of Dr. Paul F. Whitaker, of that place. Dr. Clarence Porter Jones, secretary, Newport News, Va., will be glad to give any information desired about the meeting.

The Ex-Interns' Association of St. Elizabeth's Hospital,

Richmond, Va., held its eleventh annual meeting at the hospital on October 2nd, under the presidency of Dr. A. I. Dodson, of Richmond. Clinics in the morning were followed by luncheon at Westmoreland Club. The afternoon session included an address by the president and papers by Dr. M. L. Breitstein, Baltimore; Dr. Paul C. Colonna, New York; Dr. Wright Clarkson, Petersburg, Va., and Dr. Paul T. McBee, Bakersville, N. C.

At the business session following the scientific program, Dr. H. J. Warthen, Jr., was elected president; Dr. Guy W. Horsley, vice-president; and Dr. John S. Horsley, Jr., was re-elected secretary-treasurer. All are of Richmond. The members then adjourned to the home of Dr. and Mrs. J. Shelton Horsley where they were entertained at supper.

Dr. Beverley R. Tucker,

Richmond, Va., by invitation presented a paper before the Florida East Coast Medical Association, at its meeting in Orlando, the middle of October.

Death Rates by Occupations.

Miss Jessamine Whitney, Statistician of the National Tuberculosis Association, has brought out some interesting figures in regard to this subject, in a report of a five-year study conducted under her supervision and recently made public. It was found that the highest death rate from all causes for working men between 15 and 64 years of age, was among hostlers and stable hands, being 36.22 deaths per 1,000 employed. The rate for garage laborers of the same ages was only 6.65. On the other hand, school teachers had a rate of only 4.42, and college presidents and professors fared better still with a rate of 2.69. Lawyers, judges and justices had a rate of 7.89, clergymen 10.33, and physicians and surgeons 10.69. After the age of 45, heart disease claims more than the average of professional men, but the rate for agricultural workers is only half the average. Tuberculosis and heart disease take their greatest toll among unskilled workers. Suicides among lawyers, judges, and justices are less than the average for all gainfully em-

ployed males included in the study, but suicides are greater among doctors.

Dr. W. C. Brann,

South Boston, Va., has been appointed by the President of the Lion's Club of that place, as a member of the committee on work for the blind for the coming year.

Venereal Disease Information

Is a monthly publication of the Public Health Service and is published in a form to make it easily readable for the busy physician. It is primarily an abstract journal containing summaries of articles on the venereal diseases which appear in 350 of the medical journals of the world. The price is only fifty cents a year, payable by check, money order, or cash (not stamps), to the Superintendent of Documents, Government Printing Office, Washington, D. C. This magazine provides an easy method for keeping abreast of modern advance in veneral disease work.

Dr. H. Cantor,

Petersburg, Va., attended the seventh annual graduate fortnight of the New York Academy of Medicine on diseases of the gastro-intestinal tract.

Dr. W. E. Croxton,

West Point, Va., has been elected president of the West Point Kiwanis Club for the coming year.

Dr. Walter A. Porter,

Class of '32, Medical College of Virginia, after two years' hospital work at Lewis Gale Hospital, Roanoke, Va., has located at Hillsville, Va., for the private practice of medicine and minor surgery. He is associated with Dr. C. B. Nuckolls of that place. Dr. Porter was married last summer to Miss Virginia McMillan, of Kernersville, N. C.

Dr. O. N. Shelton,

Who has been a member of the staff of Blue Ridge Sanatorium for several years, has located at Orange, Va., where he is engaged in general practice.

Dr. James Peery Williams,

Of the Mattie Williams Hospital, Richlands, Va., spent the month of October at the Mayo Clinic, Rochester, Minn., for special study.

The Rockefeller Foundation.

In a report of the activities of the Foundation for 1933, the following points are noted:

The sum of $3,286,063.01 was expended for public health work during the year. Laboratories for yellow fever were supported in Lagos, Nigeria; Bahia, Brazil, and New York City; aided three states in the United States and seventeen foreign governments in anti-malaria work; gave assistance to the central health administrations of fourteen states in the United States and to the local health administrations of twenty-three states, four provinces in Canada, and five areas in Mexico; and provided funds for local health units in fourteen other countries; etc.

In the medical sciences, The Rockefeller Foundation, during 1933, appropriated $1,173,853.00, and in the natural sciences the appropriations amounted to $807,250.00. During the year, the Foundation, provided 295 fellowships in the medical sciences and granted sums which enabled sixty-one scientists or groups of scientists to carry on research work. The total number of fellowships in the natural sciences was eighty-nine.

The toal amount expended by the Fund in 1933 for various philanthropic projects was $9,890,806.31.

Dr. Charles P. Cake,

An alumnus of the University of Virginia, who recently located in Washington, D. C., has been appointed an instructor in clinical medicine in the Georgetown University Medical School and chief of the Tuberculosis Division of Gallinger Municipal Hospital.

Dr. C. T. Pierce,

Nuttsville, Va., was elected vice-chairman of the Lancaster County Farm Debt Adjustment committee, recently appointed by Governor Peery.

Chinese Start Work on Huge Medical Center.

Work has been started in Shanghai, China, on the construction of a medical center. The land on which the center is being built was purchased by the Rockefeller Foundation nearly twenty years ago for the purpose of erecting a medical center. The Foundation has turned the land over to the board of directors of the Shanghai medical center without cost. The new medical center will include a hospital and medical college and will be patterned after similar institutions in New York and London. The hospital will have accommodations for 550 beds and as extensions are added the capacity will be increased to 1,000. It will be the aim of the hospital to serve mainly the middle class people of the Chinese community in Shanghai. The college

buildings will also house the national medical school which is now located in another part of Shanghai.

Dr. James A. Gooch,

An alumnus of the Medical College of Virginia in the class of '31, has located for general practice in Alexandria, Va., with offices at 121 South St. Asaph Street. Dr. Gooch served his internship at the State Hospital, Hazleton, Pa., and then had a two year residency at the State Sanatorium, Cresson, Pa.

Dr. George H. Reese

Has been elected president of the Petersburg (Va.) Kiwanis Club for the coming year.

Dr. W. R. Bond,

Professor of Physiology at the Medical College of Virginia, Richmond, has secured a leave of absence from the College to accept the position of Director of Medical Research with the Pyridium Corporation, a subsidiary of Merck and Company. Dr. Bond expects to enter upon his new work about the middle of November.

Dr. W. Banks Huff,

Roanoke, Va., attended Surgical Clinics at the Mayo Clinic, Rochester, Minn., the latter part of August and first part of September.

Dr. Herbert D. Wolff, Jr.,

Has located in Alexandria, Va., with offices in Doniphan Building. His work is limited to urology.

Dr. Wolff graduated from the University of Virginia in 1929 and was for some time a resident physician at the University Hospital and instructor in urology in the Department of Medicine.

Dr. Henry C. Spalding,

Of the class of '31, Medical College of Virginia, and last year a resident physician in the Medical College of Virginia, Hospital Division, has located in Richmond, Va., for the practice of obstetrics and gynecology. His offices are in the Professional Building.

Dr. E. G. Gill,

Roanoke, Va., by invitation, gave an illustrated talk before the Eye, Ear, Nose and Throat Section of the Norfolk County Medical Society on October 29th, his subject being The Management of Blood Stream Infection.

Books Available to Members of Medical Society of Virginia.

The following are some of the new books in the Library of the Medical College of Virginia, Richmond, which may be borrowed by any member of the Medical Society of Virginia, the only charge being return postage:

Arny—Principles of Pharmacy. 3rd ed.
Beard—On Understanding Women.
Bigelow—Sex Education.
Bray, G. W.—Recent Advances in Allergy.
Brinkley—Principles of General Chemistry.
Burrows, Harold—Some Factors in the Localization of Disease in the Body.
Cabot, R. C.—Physical Diagnosis. 11th ed.
Calvet, J.—L'epiphyse.
Chapin, Chas. V.—Papers of Charles V. Chapin, M. D.
Coker & Totten—Trees of South Eastern States.
Conklin, E. G.—Heredity and Environment in the Development of Man.
Cushing, H.—Consecratio Medici and Other Papers.
Cushny—Secretion of the Urine.
Daukes, S. H.—Medical Museum.
Dautrebande, L.—Les gaz toxiques.
De Schweinitz—Growing Up.
Dickinson & Beam—The Single Woman.
Dodson, A. I.—Synopsis of Genito-Urinary Diseases.
Gervais—Medicine Man in China.
Gibson, A. G.—The Physician's Art.
Goodman, N. G.—Benjamin Rush, Physician and Citizen, 1746-1813.
Greenman & Duhring—Breeding and Care of the Albino Rat for Research Purposes.
Grinker, R. R.—Neurology.
Gutman, J.—Modern Drug Encyclopedia.
Jackson, C.—Foreign Body in Air and Food Passages Roentgenologically Considered.
Jordan, H. E.—Textbook of Histology.
Knopf—The Art of Being a Woman.
Knopf, S. A.—Various Aspects of Birth Control.
Luckiesh, M.—Seeing and Human Welfare.
Ogden, C. K.—System of Basic English.
Osler, Wm.—Concise History of Medicine.
Osler, Wm.—Science and Immortality.
Pearl, R.—Constitution and Health.
Pitkin, W. B.—New Careers for Youth.
Remington—Practice of Pharmacy. 7th ed.
Reynolds, N.—Relief of Pain in Child-Birth.
Richards—Behaviour Aspects of Child Conduct.
Sabin, F. R.—Franklin Paine Mall, the story of a mind.
Scoville—The Art of Compounding.
Sharp, L. W.—Introduction to Cytology. 3rd ed.
Smith, T.—Parasitism and Disease.
Stopford, J. S. B.—Sensation and the Sensory Pathway.
Who's Who in America, 1934-1935.
Wiggers, C. J.—Physiology in Health and Disease.
Williams, G.—Minor Surgery and Bandaging.
Williams, J. W.—Obstetrics. 6th ed.

Obituary Record

Dr. William Francis Drewry,

Widely known psychiatrist, died at his home in Richmond, Va., October 19, 1934, after an illness of several months. He was a native of Southampton County, Va., and was 74 years of age. Dr. Drewry received his medical degree from the Medical College of Virginia in 1884. At the time of his death, he was director of the Bureau of Mental Hygiene of the State Department of Public Welfare where he had served since 1929. Previous to that, Dr. Drewry had been superintendent of the Central State Hospital, Petersburg, for thirty years and had also served as city manager of Petersburg. Dr. Drewry had been a member of the Medical Society of Virginia for forty-eight years and was its president in 1907-8. He had served on numerous committees of the Society and was ever active in its interests. He was an associate editor of the VIRGINIA MEDICAL MONTHLY from 1911 through 1917, when there was a change in the policy of the journal, and frequently contributed to its editorial pages. He was always foremost in any work he undertook. He was one of the leaders in the movement for the establishment in Virginia of a colony for feebleminded and epileptics and was a member of the epileptic commission. He was one of the organizers of the state conference on social work and of the State Tuberculosis Association, having served as president of the latter in 1928. Among the different organizations which Dr. Drewry had served as president are the American Medico-Psychological Association, American Psychiatric Association, the National Association for the Study of Epilepsy and Care of Epileptics, and the Virginia conference on social work. He is the only Virginian who has served as president of the American Psychiatric Association. He was a member of the Sigma Chi and Phi Beta Kappa fraternities.

Dr. Drewry is survived by his wife and four children. The burial in Petersburg was largely attended by members of the medical profession, State officials and other friends.

Dr. Wilson A. Koontz,

Shenandoah, Va., died October 13, 1934, following an illness of several years. He was 84 years of age and graduated from the College of Physicians and Surgeons of Baltimore in 1876. Dr. Koontz had been practicing in Page County for fifty-seven years, and had been a member of the Medical Society of Virginia for twenty-four years. Six children survive him.

Dr. Charles Hopkins Rolston,

Prominent physician of Mt. Clinton, Va., died September 26th, after a long illness caused by injuries received in an automobile accident two years ago. He would have been 74 years old on the day after his death. Dr. Rolston graduated from the University of Virginia, Department of Medicine, in 1884. He served eight years in the Virginia House of Delegates, representing Rockingham County. Dr. Rolston is survived by his wife and five children.

Dr. Abram Barnes Hooe,

Washington, D. C., died September 19th in the Walter Reed General Hospital, after an illness of some months. He was 63 years of age and graduated in medicine from Columbian University Medical Department, Washington, in 1896. He was a member of his local medical society, the American College of Surgeons and was formerly a member of the Medical Society of Virginia.

Dr. Clarence Ruter Dufour,

Washington, D. C., for a number of years an associate member of the Medical Society of Virginia, died on September 11th, aged 71 years. He was graduated in medicine from Georgetown University School of Medicine in 1890 and was formerly emeritus professor of clinical ophthalmology at that school.

Dr. William Minor Bryan

Died at his country home "Indian Run" near Charlottesville, Va., October 5th, following a heart attack. He was a graduate of the University of Virginia, Department of Medicine, class of '06, and was 52 years of age. Dr. Bryan was a retired Senior Surgeon in the U. S. Public Health Service. His wife and two children survive him.

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"It has been shown that from fifty to seventy-five per cent of infants suffer from some degree of rickets, while some authorities even go so far as to place the percentage at eighty-nine." A. F. Hess and Unger—*McCollum and Simmonds* "The Newer Knowledge of Nutrition." 1925. American Journal Dis. Child. XXIV, 327, 1922.

"Such a discovery is that of the irradiatioon of milk (both fluid and dry) by the ultra-violet ray, thereby increasing the antirachitic vitamin to such an extent as to make the milk both protective and preventive against rickets." *Auerbacher:* "Cure of Rickets Through Irradiated Milk."—Copyright 1932, by A. R. Elliot Publishing Company.

"A quart, or even less, of this milk suffices to protect infants from rickets, notwithstanding the fact that this quantity contains only 50 units of Vitamin D as assayed by the standard rat technic." Journal of the American Medical Association, August 20, 1932.

". . . the children who had marked rickets had a greater incidence of caries and twice as many carious teeth per child as those who had had mild rickets in infancy." *Greenbaum, J. V. & Selkirk, T. K.*, Am. Jour. Diseases of Children, 43, 774, March, 1932.

"Authorities have said that probably fifty per cent of these deaths in childbirth are preventable. I should go further and say that if we could eliminate rickets practically one hundred per cent of those deaths could be prevented. The deformities of the bones that occur in early infancy are responsible for the deformed pelves of the mothers who die in childbirth." *Dr. Shirley W. Wynne.* Comm. of Health, New York City, Certified Milk, October-November, 1933.

"I believe no one alert to existing knowledge would hesitate now to state unqualifiedly that the pregnant and nursing mothers of today are generally getting too little Vitamin D. If our studies and those of Mrs. Mellanby are as sound as we believe they are, they will afford evidence that in temperate regions people of all ages should take some source of Vitamin D." "Where We Stand Now in our Knowledge of Nutrition"—by *E. V. McCollum, Ph. D.*, Johns Hopkins University. Reprinted from the Medical Searchlight and Science Bulletin, Philadelphia, Vol. VIII, No. 1, January, 1932.

Abstracts from Medical Authorities of Prominence:

"The antirachitic potency of human breast milk can be augmented in a simple and acceptable manner by including Vitamin D milk in the diet of the mother, during lactation." "The Antirachitic Potency of the Milk of Human Mothers Fed Previously on Vitamin D Milk of the Cow"—by *John W. M. Bunker, M. D., Robert S. Harris, M. D., and Richard S. Eustis, M. D.* Reprinted from the New Eng. Jr. of Med., Vol. 208, No. 6, Pages 313-315, February 9, 1933.

"To observe the effects of Vitamin D on tooth decay, 162 children ranking in age from 2 to 17 years, were under observation for a period of one year. The results showed that the group receiving the extra Vitamin D had less than half as many cavities as the group without this necessary food factor."—Conclusions from New Research on Dental Caries, Department of Paediatrics, University of Toronto. "Diet Does It," by *E. V. McCollum, Ph. D., Sc. D.*, School of Hygiene and Public Health, Johns Hopkins University.

"Although it (rickets) is usually a disease of infancy, it sometimes attacks older children and even young adults and is then called late rickets." *Dr. E. V. McCollum* and *Dr. Nina Simmonds*, "The Newer Knowledge of Nutrition," 4th Edition, Page 272.

"The literature of the decay of teeth, osteomalacia, etc., gives definite evidence that Vitamin D is necessary throughout the whole of life." *T. G. H. Drake, M. D.*, Paediatric Research Foundation.

"In man, the addition of Vitamin D to diets previously considered adequate in all respects, including phosphorus, is an important factor in the prevention of dental caries." *Mary Caldweell Agnew, M. A. R., Gordon Agnew, D. D. S., F. I. C. D.*, and *Frederick F. Tisdall, M. D., F. R. C. P.* (C), Toronto, Canada. Reprinted from Jr. Ped., Vol. II, No. 2, Page 190, February, 1933.

"It is now well understood that dentist and physician alike must resort to reenforcement of diet, and, at the present time, calcium phosphate with Vitamin D seems to be the most desirable agent. Such reenforcement is not necessary if the patient's diet contains Vitamin D, with the necessary mineral content. Because American diets are so inadequate in these requirements, diets of patients who come to the dentist for treatment of their teeth will have to be corrected or reenforced." Jr. Am. Dent. Assn., Vol. XXI, Pages 75-83, 1934. Boyd S. Gardner, D. D. S., Rochester, Minn.

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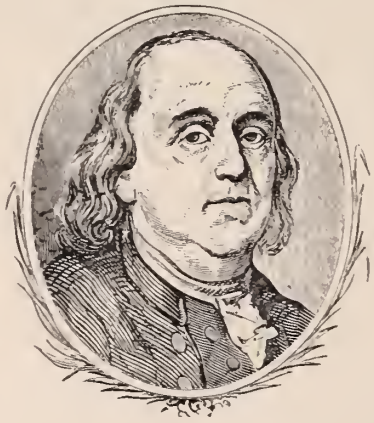
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THE GENERAL PRACTITIONERS' INTEREST IN RECTAL DISEASES.*

HARVEY B. STONE, M. D.,
Baltimore, Md.

From the standpoint of the general practitioner, the things that interest him in rectal conditions are to find out what is wrong with the patient and what can be done for it. The first step toward solving these questions is to get from the patient a reasonably clear statement of what his trouble really is. It is surprising how difficult this may be, even in the case of intelligent people. They will fail to answer helpful questions put to them in regard to the nature of their symptoms and their duration unless these questions are made quite specific. Therefore, the first matter to which I would call attention is the asking of questions in such a way that the patient cannot evade them and must give the information sought. It is useless to ask the patient whether or not he has rectal trouble but it helps to ask specifically, "Do you have bleeding?" "Do you have pain?" "Do you have itching?" etc., and then to follow that up with questions such as "How long have you had bleeding?" "Is it continuous?" "Is it getting worse?" "What is the color of the blood?" etc. With a history obtained from this type of direct and specific questions, it is often possible to make a tentative diagnosis that is surprisingly accurate before the patient is even examined because many of the rectal conditions that are commonly met with present such a clear history that they cannot be mistaken for anything else. However, the taking of the history is simply the first step toward the study of the case and leads to the next procedure which is a proper examination of the patient.

Perhaps for various reasons, one of which may be the reluctance of medical men to make an examination that is disagreeable to themselves and to the patient, the whole field of rectal work has suffered neglect which has interfered with the rendering of adequate medical service in many a case. Dr. Osler used to say that the difference between a general practitioner and a consultant was that the consultant made a rectal examination. This facetiously extreme statement has a great deal of truth in it. The first topic to which I would like to call attention, therefore, is the making of a proper rectal examination. For this purpose, several things are essential; the proper position of the patient, adequate light and experience on the part of the examiner. The widespread custom of attempting to make a rectal examination with the patient lying on his back in the middle of a soft bed with his knees drawn up is about as wrong as is possible to be. In this position it is out of the question to see the structures clearly, palpation is rendered more difficult and proctoscopic investigation is impossible. A better position is the so-called Sims' lateral position in which the patient lies on either side with the knees flexed against the abdomen. In this position it is possible to make a good investigation of the external structures and to palpate satisfactorily the internal organs that can be reached, but it is not favorable for proctoscopic examination. The ideal position for such examination is the knee-chest position or the position of Hanes with the trunk hanging down vertically and the thighs supported on the table. If the patient's physical condition permits the taking of one or the other of these two positions, it is highly important that it be employed in making rectal examinations. Sometimes because of heart or lung or brain lesions, the knee-chest position cannot be safely assumed and the lateral position of Sims must be employed. In the knee-chest

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position the pull of gravity straightens out the sigmoid and allows the passage of a proctoscope to a distance which could not otherwise be reached. The matter of light is also important. For the superficial inspection of the parts about the anal orifice any good source of external light is satisfactory. For proctoscopic examination some intrinsic lighting system must be employed and the writer prefers those instruments in which the light is at the eye end of the proctoscope rather than at the distal end. Lights at the distal end have to be smaller in size, they burn out more rapidly and they easily become clouded by bowel content getting smeared on them. Of course, the most important factor in the making of an adequate rectal examination is experience on the part of the examiner. Unless the examiner can interpret the things he sees and feels, his opinion will not be of great value. For instance, the writer of this paper, who rarely employs the ophthalmoscope, has no great difficulty in seeing the eye grounds, but, after having seen them, he knows little about the meaning of the things that he sees. For this reason, it is desirable that medical men familiarize themselves with the ordinary normal and abnormal appearances in the region of the anal canal. In short, the more often a man makes rectal examinations, the more competent and valuable becomes his opinion.

There are numerous symptoms that definitely indicate the wisdom of performing a rectal examination. Itching, pain, swellings, lumps, blood, pus or mucus are all clear reasons for requiring a rectal examination. Particular emphasis should be placed upon the importance of blood as a reason for complete investigation. There is a widespread impression among the laity, which is shared to some extent by the medical profession, that bleeding is indicative of the presence of hemorrhoids and that hemorrhoids are a minor ailment that, as a rule, do not urgently call for treatment. Consequently, it is only when bleeding is profuse or long persistent that it is apt to be investigated. This attitude cannot be too strongly reprobated. Bleeding may be associated with many different conditions besides hemorrhoids and of these one important lesion is cancer. Unless we learn to regard rectal bleeding as possibly of great importance, we are not going to improve in the early recogniton of cancer of the lower bowel. In addition to these definite local symptoms, there are many other conditions in which a rectal examination should certainly be carried out. In all obscure digestive disorders and, in fact, in all abdominal cases that are not entirely clear, such an examination is essential to a complete study of the case and, finally, in every patient whose illness has been difficult to diagnose and where a thorough study is required to arrive at a conclusion, it is essential that such a study include a rectal examination. Perhaps the best way to approach the whole subject of rectal disorders is to take up in sequence the common symptoms and point out the lesions which cause them and the principles of treatment required for their relief.

ITCHING

Itching about the anus occurs frequently as a minor and unimportant annoyance. Occasionally, however, it becomes a matter of very real concern. The patient's sleep may be so interfered with and his nervous stability so much disturbed that there is a real effect upon his general health. Cases are seen in which a loss of weight of from ten to fifteen pounds has taken place and an intense nervous reaction to the persistent itching has developed. There are recorded cases in which failure to relieve this annoying symptom has resulted in the patient committing suicide. It will be seen, therefore, that pruritus ani of this extreme type is a real problem for consideration. The itching may be due to many causes, some of them general, such as jaundice or diabetes, and some of them due to local lesions like pin-worms, fistulae, external hemorrhoidal tags, etc. The cases which are due to a general constitutional disorder will not be considered here. Those which are consequent upon some local lesion will disappear with the correction of the lesion. The group of patients that I wish to consider here, particularly, are those with so-called idiopathic pruritus ani in which no general or local cause can be found to account for the persistent and intense itching. Many theories have been advanced to explain this condition, none of which has been proven, and many treatments have been advanced for its relief, none of which is entirely satisfactory. A whole series of ointments, lotions, powders, and other local applications have been recommended. Radiation with X-ray, ultra-violet light and radium itself has been employed. Two or three operative treatments have been described. Of all the methods so far intro-

duced, the one that has given me most satisfaction has been the subcutaneous injection of very small amounts of alcohol, scattered in numerous punctures over the area involved. The writer has described this technique in detail in one or two other publications. It is sufficient to say here that it usually gives complete and quick relief. Unfortunately, the patient cannot be promised a cure by this procedure, as most of the patients thus treated return sooner or later with a renewal of the pruritus. Generally this takes place in a period of between six and eighteen months, sometimes earlier and occasionally as late as five or six years. The recurrent form of the disease is rarely as severe as it was before the treatment and there is no objection to repeating the alcohol injection. Indeed, it may be done as many times as seems necessary. The writer has had two physician patients suffering with this trouble, each of whom received three injections at intervals of about a year and a half to two years apart and each of whom seemed to be cured after the third injection.

Discharge

A second common symptom is discharge about the anal opening. The discharge may be either of pus or mucus and as a rule the patient does not discriminate between the two types of discharge. Fistula is the most common cause of purulent discharge, although pus may also be found associated with syphilitic condyloma, with ulcerative colitis and with certain rare conditions like tuberculosis or malignant ulceration of the anal margin. However, the common cause of a purulent discharge is fistula *in ano,* and for the treatment of this condition there is only one adequate method, which is the complete surgical excision or incision of the fistulous tract. This may and often does require a division of some of the fibers of the sphincter muscle, and even in the best of hands the operation, in occasional instances, may be followed by weakness of control of the bowel movements afterward. Such an unfortunate complication is much less apt to happen if the surgeon is fully aware of the principles of proper treatment which consist in general in dividing the muscle only in one place at a time, directly across its fibers and not tangential to them, and avoiding the packing of the wound with hard packs for a long time after the operation. There are some cases in which the internal opening of the fistula is situated high in the rectum that are better done in two stages than in one. The whole matter may be summarized in this way. That in order to cure the fistula a complete operation is necessary and that with proper care the chance of serious damage to sphincter control is quite small. Mucous discharge about the anus is caused in some instances by prolapsing internal hemorrhoids, by protruding rectal polyps and sometimes by carcinoma of the rectum. It is relieved by the proper treatment of the underlying conditions.

Protrusions

Protrusions about the anus may be due to growths or swellings which spring either from the skin covered margin of the anal canal and which are, therefore, external in origin, or which come from within the anal canal and protrude through it and are covered with mucous membrane. The commonest lesion which causes protrusion is hemorrhoids, either external or internal. The statement by the patient that a protrusion has suddenly developed with sharp, stinging pain and the formation of a hard, tender lump within a few hours usually means the development of a thrombus in an external hemorrhoid. Other external types of protruding masses are condyloma lata, which is a secondary syphilitic lesion and condyloma acuminata or veneral wart, so-called. This condition, now rather rare but formerly quite common, is characterized by the cauliflower-like growth of multiple papillomata about the anal margin. It is benign but is very apt to recur locally unless it is removed with the actual cautery. Protrusions originating from within the anal canal are usually internal hemorrhoids that prolapse, but they may be benign polyps with a long pedicle that permits their extrusion through the anus. The treatment of such polyps is simple excision with litigation of the base. It is very rare for a malignant tumor within the bowel to prolapse externally but this does occasionally happen.

Bleeding

Of all the symptoms of trouble about the anus the one that the patient is most apt to notice is bleeding but, as has been mentioned earlier in this paper, the widespread tendency to attribute bleeding to hemorrhoids and to disregard it to some extent on that account, has made many people feel that the appearance of blood associated with bowel

movement is not a matter of any great concern and does not require particular investigation. This is an extremely unfortunate belief. It is my purpose now to show that bleeding from the rectum, associated with bowel movement or independent of it, is by no means limited to hemorrhoids as a cause. In fact, the following conditions may all be associated with bleeding and all require proper medical attention: internal hemorrhoids, rectal polyps, ulcerative colitis, intussusception in children and carcinoma. These conditions all may cause the appearance of fresh blood. Of course, when one includes in the subject of bleeding from the rectum the passage of old, dark blood or tarry stools, it then becomes necessary to take into consideration the entire alimentary tract as a possible source of the bleeding including as one of its important possibilities, duodenal or gastric ulcer. Enough has been said to indicate not only the strong advisability but the necessity of trying to find out where the blood comes from and what its presence indicates. It is not too strong a statement to say that a physician who neglects to study as thoroughly as he can the cause of bleeding from the bowel is guilty of negligence in the handling of his patients. The steps of examination which I have already indicated above will usually reveal the origin and nature of the bleeding if it lies within the lower eight or ten inches of the bowel. Of all the conditions mentioned, it is, of course, true that hemorrhoids are far the most common as a source of bleeding, and, at this point, I should like to describe briefly my views on the treatment of hemorrhoids.

It seems to me that for practical purposes, patients with hemorrhoids may be divided into three principal groups. There is first the immense number of people who have some slight hemorrhoidal development which can be detected on examination but which rarely gives the patient any trouble or subjective symptoms. Once or twice a year there may be very slight bleeding or a little protrusion or some slight discomfort. This class of cases, including as I have said a large number of people, in my judgment requires no treatment whatever most of the time and only on the rare occasions when there is a little disturbance is some bland, local treatment necessary, accompanied by measures to make defecation easy and regular. At the opposite extreme from this group, there is another much smaller group of people who have persistent and profuse bleeding or slight bleeding regularly continued day after day for months or years. In addition, they may have annoying protrusion with occasional attacks of thrombosis and strangulation of the piles. I have seen patients in this group who have bled down to the extent of having left only 20 to 25 per cent of hemoglobin. In this type of case, in my opinion, nothing but a complete surgical operation is to be considered. They have a minor illness, it is true, but a minor illness which has developed to a major degree and no palliative or half-way treatment will restore these people to complete health. The operative removal of hemorrhoids is almost devoid of mortality, it gives a very high percentage of completely satisfactory results and where it is indicated is one of the most satisfactory operations in surgery. For the patients of the kind I have been describing, there is no reason whatever to consider them as anything except straight surgical cases. Between these two extremes there lies a large middle group of people who at times have considerable annoyance from piles and at other times may go for months or even years quite comfortably. This class is particularly the one in which palliative measures are justifiable. The use of astringent and sedative ointments, of cold compresses, of mineral oil by mouth and an occasional day or two of rest in bed will often keep them in good condition for a long while and they may never have to have operation performed.

At this point, I should like to say a word or two about the injection method of the treatment of hemorrhoids. This method, which fell into disrepute in America years ago because of its widespread use by quacks, has been revived, particularly by British surgeons, as a respectable method of treatment. It has, I think, a distinct and proper place in treatment but I should say that place was a very small one. It is a mistake to employ it at all where there are external hemorrhoids or any complication of hemorrhoids such as fissure, thrombosis, ulceration, etc. It is also a mistake to employ it where there are internal hemorrhoids which are enlarged and fibrous and prolapsing. Therefore, it should be restricted to cases of internal hemorrhoids alone, which bleed but which do not prolapse and which are not enlarged. When properly used in this small group of cases, it gives very satisfactory

palliative results. It is a simple procedure and it is entirely proper to resort to it when it is indicated. Unfortunately, as time goes on, it is found that many of the cases treated by this method have the tendency after a year or two to return again with more trouble. None the less, it has a usefulness that cannot be denied.

Bleeding caused by benign polyps, as stated above, is treated by removal of the polyp with its base. Bleeding due to intussusception involves abdominal surgery which will not be considered here. Bleeding due to ulcerative colitis is caused by one of the most obstinate and recurrent of all the non-malignant diseases of the bowel. As in the case of pruritus, we are dealing with a disease of unknown cause and, therefore, the treatment has been unsatisfactory. Patients with chronic ulcerative colitis should be regarded as seriously ill. The disease may occasionally end fatally and is always very stubborn and resistant to treatment. Rest in bed, a bland diet with little residue, irrigation of the colon with various cleansing and antiseptic solutions is the usual principle of treatment. Bargen, of the Mayo Clinic, believes that this disease is a specific infection by a special type of streptococcus, and has developed a method of vaccine and serum treatment for it. In his hands this has given promising results, but many other students of the subject have failed to confirm his findings. Bleeding due to cancer leads to a discussion of the most serious disease of the bowel—malignant tumor—and I wish to defer that subject until a little later in the course of this paper.

PAIN

Pain is associated particularly with three diseases of the rectum; fissure *in ano,* abscess and thrombosed or strangulated hemorrhoid. The pain of each of these conditions differs from the others and is more or less characteristic.

Patients who suffer with fissure *in ano* usually awake in the morning feeling perfectly well and have no trouble until the first bowel movement. Accompanying this and often lasting for hours afterward, there is pain which varies in intensity but is often described as gnawing or biting and which gradually subsides through the day unless a second bowel movement starts it again. A fissure is, as its name implies, a tear longitudinal in direction running across the muco-cutaneous margin at the anal outlet. It is often accompanied by a small projecting tag of loose skin which is called a sentinel pile but which really is not a hemorrhoid at all. In a great majority of cases, fissures are located close to the posterior midline. A certain number of fissures, if seen early, will get well under local treatment with bland ointments, care to prevent straining or difficult stools and occasional touching with silver nitrate. When they have been persisting for several months, however, a true chronic ulcer forms with hard scar tissue lining its base and edges. Such a chronic fissure rarely yields to anything except surgical treatment. The best treatment is probably the complete excision of the fissure so as to get fresh wound surfaces which heal kindly and, at the same time, a thorough stretching or partial division of the sphincter muscle. The sphincter muscle goes into reflex spasm in cases of fissure and this spasm accounts for the prolonged pain that characterizes fissure. In order to overcome this tendency to spasm, it is necessary to place the muscle at rest for a number of days and this can be done by stretching or partial division of some of its fibers.

The pain of perianal or perirectal abscess is quite different. It usually has no relation whatever to bowel movement, begins rather gradually but steadily increases in intensity until it becomes the throbbing, unbearable pain that accompanies abscess anywhere. The treatment for abscess, of course, is incision and drainage to give ample outlet to the accumulated pus. Many abscesses are followed by fistulae that may require a secondary operation to cure them. The incision for opening an abscess should be made in a radial direction from the edge of the anal canal and if it is made amply long and carried well up unto the edge of the anal canal, fistula is less apt to result.

Hemorrhoids, uncomplicated, are not painful but one of the characteristic painful lesions about the anus develops when a hemorrhoid becomes thrombosed or strangulated. In such cases the pain is very abrupt in onset. Patients often say that they feel as though they had been stung by an insect, so sudden is the onset of the trouble. The pain continues in intensity constantly and irrespective of bowel movement but does not have the throbbing character of abscess. It usually increases for a period of four or five days in cases that are not treated and then begins to grow less and finally disappears. Accompanying the pain is the sudden de-

velopment of a swollen, hard lump, and this history of sudden pain and the appearance of a swollen, hard lump is almost diagnostic of a thrombosed or strangulated hemorrhoid. In most cases of this sort, soothing local treatments such as carbolated glycerine or cocaine ointments will give relief and the trouble will subside in a few days. In larger thrombosed piles, however, it is often wise to excise the thrombosed vein *in toto* and this can be done usually without difficulty under local anesthesia.

CHANGES IN BOWEL HABIT

One of the symptoms that suggests investigation of the anal and rectal region is a noticeable change in the patient's bowel habits. If this is a matter of only a few days' duration, it generally has no more significance than some food disturbance causing diarrhea or constipation. However, when either of these conditions persists, it may be caused by some local trouble in the lower bowel and steps should be taken to examine the patient with this in mind. Among the organic diseases which may cause diarrhea are ulcerative colitis, amebic colitis or any other form of infection which produces irritability of the bowel, and an exudate of pus and blood. Among conditions that give rise to constipation are rectal stricture and tumors of various kinds. Rectal stricture may follow traumatism, particularly surgical traumatism—that is to say, previous operations for some rectal condition. The writer has seen one or two strictures following burns from the use of enemas which were too hot. Among colored women particularly there is a spontaneous form of stricture which develops gradually and may proceed almost to complete obstruction. This condition in the past has been attributed to syphilis and by certain writers to gonorrheal infection. It probably is not due to either of these diseases but to some unknown specific infection. Recent evidence has suggested that it may be caused by lymphgranuloma inguinale. Progressive dilatation is the customary principle of treatment. Dr. Hebb, in the Rectal Clinic at the Johns Hopkins Hospital, has been carrying on some interesting experimental work on the effect of intravenous injections of tartar emetic for this form of stricture. He has not as yet published his results but they are in certain respects quite promising. Benign tumors such as enlarged polyp or papilloma may occasionally block the bowel sufficiently to interfere with bowel movement. Such growths, of course, require surgical removal. The most serious condition giving rise to alteration in the customary bowel habit is cancer of the rectum and to this subject a more detailed consideration will be given.

CANCER

Cancer of the rectum is a subject of the first importance from more than one standpoint. The rectum is the second most common site for the development of malignant disease in the whole alimentary tract, being preceded in frequency by the stomach only. Indeed, with the exception of the stomach, breast and uterus, it is said to be the organ most often involved in malignant disease. The growth of cancer in the rectum in many instances proceeds comparatively slowly and extension into distant regions or adjacent organs takes place comparatively late. This late extension, combined with the fact that the rectum permits wide radical removal without damage to vital structures, makes the surgical attack more hopeful of success than it is in most of the other regions. Furthermore, if adequate examination is made, it is always possible to determine the presence or absence of growth in the rectum because it is accessible to touch or direct sight throughout its whole extent. There should be no difficulty in making early diagnosis in this particular region if the trouble is taken to insist upon examination whenever symptoms at all suggestive present themselves. These three features of the disease, namely, accessibility to examination, relatively slow growth, and suitability for radical surgery, should be emphasized, as together they form a combination giving the best prospect of cure in any form of internal carcinoma. In spite of this fact, however, it remains true that a large percentage of the cases that come to the surgeon are inoperable when first seen. Jones, of Boston, and one or two other surgeons, who have particularly contributed to this field of work, are able to report something more than 50 per cent of their cases as still being operable when first seen. On the other hand, in communities where neither the surgeons nor medical men have cultivated interest in this particular subject, it is quite usual to find not more than 20 per cent of patients are still within the stage of operability when the diagnosis is first made. It is, therefore, a matter of the first importance that all of us should be alert to the early indications of trouble in the rec-

tum from whatever source and insist upon early and adequate examination. By so doing, not only will patients receive proper treatment for a variety of diseases, but also the percentage of cancers that are detected and treated while there is still a good chance of complete cure will be greatly increased.

It has been pointed out by many recent writers that the description given in the earlier textbooks of the symptoms of cancer of the rectum apply chiefly to advanced cases and are of little value in the early recognition of the disease. Thus, such symptoms as cachexia, marked loss of weight, abdominal cramps, nausea, vomiting and distention are signs of impending intestinal obstruction and advanced disease. There are two important symptoms that have already been referred to in this paper suggestive of the presence of growth in the rectum which should lead always to a careful examination. These are the presence of blood in the bowel movements and changes in bowel habit. It has already been pointed out in this paper that there are numerous causes for presence of blood in the stool, and it is, therefore, obvious that this symptom is not in any sense diagnostic of cancer. Its importance lies in the fact that the loss of blood accompanies the development of cancer in such a high percentage of cases. It is probable that 80 per cent or more of growths in the rectum produce bleeding at one time or another. Therefore, the existence of blood is a symptom of importance. The changes in bowel habit which so often develop with the growth of a cancer are more or less characteristic and deserve a description at some length. Patients with this symptom sometimes complain of constipation and sometimes of diarrhea and occasionally of alternating periods of constipation and diarrhea, but if they are questioned closely they will describe in most instances the following set of symptoms: They have an urgent desire for bowel movement frequently through the day, sometimes as many as twenty to twenty-five times. When an attempt is made to empty the bowel there is often the passage of nothing but some gas with bloody mucus and no actual stool. It will be seen that the frequent desire to have a stool may be interpreted by the patient as diarrhea and so described. On the other hand, the fact that actual movement is often lacking for two or three days at a time is the reason that other patients say that they are suffering from constipation. The medical term "tenesmus" is generally used to describe in one word this feeling of constant desire to defecate without accomplishing natural movement, and tenesmus and bleeding constitute the two major symptoms of cancer of the rectum. There are other less important symptoms, such as a sense of weight or pressure in the lower bowel, sometimes a dull, aching pain, occasional disturbances of the bladder function, but these symptoms are of secondary importance compared to tenesmus and bleeding. On examination it is possible to feel by touch all growths that lie within three or three and a half inches of the anal margin, and the experienced examiner can usually make a positive diagnosis by touch alone. A mass which is hard, nodular, perhaps with a crater in the center and with everted edges that bleed easily on touch is almost surely a malignant growth. For those tumors which are situated higher than the finger can touch, the proctoscope is a great aid in diagnosis. It is almost always possible to pass a proctoscope at least six or seven inches if the patient is placed in the knee-chest of Hanes' position for examination, and as the normal rectum is only six or seven inches long, such growths are visible by this means.

The scope of this paper does not include diseases of the colon above the rectum but it may be said in passing that many growths in the lower part of the sigmoid can also be seen with the proctoscope. If there is doubt as to the nature of a growth which can be seen or felt, it is possible to remove a portion of it for microscopic study and thus arrive at a positive diagnosis.

When the diagnosis "cancer of the rectum" has been made, the question then presents itself as to what course should be pursued in its treatment. In those cases where the growth is apparently movable and the patient is in good enough general condition to stand a major operation, the writer believes that the ideal procedure is to remove the entire rectum by what is known as the Miles operation or a one-stage abdomino-perineal resection. Sufficient experience has now accumulated to a show that where this operation can be performed, it gives by all odds the highest percentage of permanent cures. In the hands of experienced surgeons, from 25 to 40 per cent of patients in whom this operation has been performed survive more than three years afterward and the number of five-year cures is higher by this

method than by any other. Unfortunately, many cases when first seen are not suited to this treatment, either because the growth itself is too far advanced to give hope of successful removal, or because the patient is too weak or too old or too fat or otherwise too ill to allow the operation to be done with reasonable safety. In such cases radium or deep X-ray applied by an experienced and competent radiologist will often check the development of the growth for a considerable time, cause it to grow smaller and prolong the patient's life. In those growths of an epithelial character immediately at the anal margin, radiation treatment has apparently a greater effect than on the adeno-carcinomas, and for these anal growths, radium is, perhaps, the first choice for treatment. Finally, there are patients in whom both radium and operation fail to offer relief and who are suffering greatly with symptoms of partial or nearly complete obstruction. To relieve the suffering of such patients and make their remaining life period more comfortable, a palliative colostomy is the thing to do. This outline of treatment is necessarily condensed and diagrammatic. There are cases of cancer of the rectum in which some other form of operation than the Miles type is probably the method of choice, but, speaking generally, the writer feels that complete excision by the Miles method is the ideal procedure.

To summarize this paper, let me say that many patients suffer greater or less inconvenience, discomfort and ill-health from rectal conditions that could be promptly and completely cured, if we were more accustomed to examining and treating this large and important group of diseases. It should be the duty of every physician to see that proper examinations are carried out in every instance when rectal symptoms present themselves. By so doing, we shall not only relieve a great number of people of distress due to the common ailments like fissure, fistula, hemorrhoid, polyp, etc., but we shall detect and cure a much larger percentage of those who have the grave disease of cancer of the rectum.

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THE INJECTION TREATMENT OF ACUTE THROMBOPHLEBITIS IN VARICOSE VEINS.*

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Excluding leg ulcer, the most common complication of varicose veins is thrombophlebitis.

The specific etiology of this phlebitis in varicose veins is still a subject of controversy. The stagnant blood and the diseased vein wall are believed to offer favorable conditions for the propagation of bacteria from distant foci. Most cases are thus presumed to be of infectious origin. The inability to recover micro-organisms in all cases, and the development of many cases following slight trauma suggest that some are of aseptic or plastic nature.

The essential pathology is an endophlebitis resulting in thrombus formation. In the vast majority of cases, the inflammation subsides, and the thrombus is absorbed or canalized. In a few, softening and suppuration occur. Embolism has been reported occasionally, but this complication has been exceedingly rare in thrombophlebitis of the superficial veins of the lower extremities, particularly when the thrombophlebitis has occurred in a varicose vein. Thus, in a recent analysis of sixty cases of embolism that came to autopsy, Miller and Rogers found a related thrombosed varicose saphenous vein only once, and concluded that varicose veins are of little or no significance from this standpoint.[1]

This paper is not concerned with the septic thrombophlebitis that develops in normal veins. Such cases are always of infectious origin, occur post-operatively or during the course of an infectious illness or cachectic disease. Veins of the superficial or deep system may be affected. The thrombophlebitis of the femoral or iliac vein, familiarly known as "milk leg" is the classic example in the deep system.

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Thrombophlebitis in varicose veins is characterized by the usual signs and symptoms of localized inflammation. Along the course of the vein there is an area of redness, induration, tenderness and soreness. The vein can often be palpated as a tender, hard cord. There may be slight fever and an elevation of the white blood cell count. The inflammation is prone to extend along the vein, or to skip to other varicosities. In contra-distinction to phlebitis in normal veins in which canalization or restitution to normal usually occurs, the thrombophlebitis in varicose veins often results in permanent occlusion of the vein, thus curing the patient of that particular varicosity.

The treatment of thrombophlebitis of the lower extremities has unquestionably suffered from a failure to separate the distinct entities, phlebitis of a previously normal vein, of a varicose vein, of the deep or of the superficial system. The orthodox procedure has universally consisted of rest in bed and elevation of the part. All have emphasized the danger of moving the limb in the slightest degree, and the necessity of confining the patient to bed for weeks or months after the subsidence of the inflammation.

In recent years, there has been a rapid swing away from this time-honored conception of treatment. Least progress of all has been made in the management of milk leg, but, even here, the modern tendency is to allow the patient to get up shortly after the abatement of fever, to advocate the early employment of support and massage. Much more striking is the change in attitude toward thrombophlebitis of the superficial venous system. We have come to realize that such cases, involving inflammation in veins more accessible than veins anywhere else in the body, branches of all the long and short saphenous, constitute a special group calling for special therapeutic consideration.

The change has been principally toward ambulatory methods. In 1928, Homans, writing of superficial phlebitis, made the following statement, "One should try to visualize the thrombotic process in each case. If it is attended by little fever and local tenderness, it will soon become absorbed, or organized and canalized, so that the fear of detachment of a clot by exercise after improvement has begun need hardly be entertained. Therefore, in the milder cases, exercise of the leg in an elevated position within a week or ten days after the process has passed its height should be begun. We are all too fearful of active exercise in an elevated position, forgetting what the patient is subjected to in the course of routine nursing, the use of the bedpan for example."[2]

Deutsch, in 1929, advocated a supporting bandage, such as an Unna's paste boot, and ambulatory therapy from the beginning of an acute attack, adhering, however, to the orthodox method in these rare cases of phlebitis of the short saphenous, emptying into the popliteal vein in the popliteal space.[3] McPheeters, likewise, allows his patients to remain ambulatory, applying a rubber sponge and elastic bandage directly over the inflamed area in phlebitis below the knee, an adhesive strap support when the condition occurs in the thigh.[4] Termier, Hamm and Schwartz have recently revived an old practice of applying leeches to thrombophlebitic areas, and those who have used this method speak well of it.[5-6]

Various operative procedures have been employed for the relief of superficial thrombophlebitis. The chief of these have been the proximal and distal ligation with currettement of the thrombosed vein, and ligation with total excision of the thrombosed segment. Homans, in the paper referred to above, suggested simple ligation of the saphenous above a septic thrombosis, as a method of cutting short the disease and warding off late complications. Harvey Stone, in 1932, wrote to popularize these principles.[7] His article described four cases of embolism from superficial saphenous vein phlebitis, —two of his own and two from the literature. The author emphasizes the ease with which embolism could have been prevented by simple ligation of the saphenous in the thigh under local anesthesia. He describes his procedure in four cases, two in which he ligated the vein in the thigh, and two in which he ligated and excised the involved segment below the knee. One of his cases was a pregnant woman in whom it was feared the activities of labor would dislodge a thrombus. This is mentioned as one case of Homans, and a case of my own, fell into this category.

As stated before, there has been no attempt in the literature to differentiate between thrombophlebitis in the varicose and that in the non-varicose vein. I believe there is sufficient ground for this distinction. The varicose vein is already a diseased

structure, the walls being thinned out and often degenerate, and the contained blood stagnant and unoxygenated. A chronic latent infection is often present in the diseased wall, so that slight trauma results in spontaneous local thrombophlebitis. There is a reversal downward of the venous circulation. Conditions are such as to encourage the formation of a firmly adherent clot so that emboli should be less frequent than in phlebitis of a previously normal vein. The thrombophlebitic process often does no other harm than permanent occlusion of the veins,—a cure for the patient similar to that obtained by the injection method of treatment.

I am sure that the idea of injecting varicose veins, involved in a thrombophlebitic process, with a solution intended to complete the thrombotic and occlusive phenomena has occurred to many. I recall a speaker at the meeting of American Medical Association in Philadelphia stating that he had injected a sclerosing solution directly into the thrombophlebitic process with no untoward results. This procedure certainly seems to me a risky one, and I have never attempted it. However, certain observations made in a rather extensive experience with the injection method of treating varicose veins have led me to believe that there is, in a different way, a field of usefulness for the method in thrombophlebitic cases.

This has consisted of occluding the vein leading from the inflamed area, several inches above the upper limit of the inflammatory process, by the injection of sodium morrhuate. The technic is that commonly employed in the injection method. Tourniquets are applied, usually in the thigh, well above the thrombophlebitic area, isolating several inches of the long saphenous vein. Two to four c.c. of the sclerosing solution are injected into the isolated segment without preliminary aspiration. A little more solution is used than the vein segment would ordinarily call for, and the tourniquets are left in place a few additional minutes to insure complete occlusion at one sitting. The usual pad is placed at the site of the injection, a tight pressure band of gauze and adhesive is applied across the vein at the femoro-saphenous junction, and the thrombophlebitic area is supported by transversely placed strips of elastoplast. The patient is urged to remain ambulatory. Two days later, if the long saphenous is not occluded, it is re-injected, or simply needled, and the unclotted blood allowed to escape. The portion of the saphenous between the therapeutically occluded segment in the thigh, and the thromboplebitic area below, will often become spontaneously thrombosed. If this does not occur, the portion is injected a few days after the acute inflammation in the thrombophlebitic area has subsided—usually in about a week. Sodium morrhuate, which consists of sodium salts of the fatty acids of cod-liver oil, is used as the most efficacious and least toxic and least painful of the sclerosing agents. One may be reasonably sure of obtaining complete occlusion of a given segment with a given amount of the solution, after becoming familiar with its usage. It is supplied as a 5 and 10 per cent solution. Ordinarily the 5 per cent strength is used, 0.5 to 2 c.c. being injected per vein segment, and not more than 5 c.c. per treatment. I can confirm the experience of others as to the reliability of this preparation, and Ochsner and Mahorner quite recently demonstrated experimentally that it is far more effective than any other solution used in the injection method.[8]

Case 1: Mrs. M., record No. 1,434. Patient presented herself at the office on November 11, 1932, complaining of pain and swelling over a varicose vein of the right leg of one day's duration. She stated that she had only recently recovered from a similar trouble in the other leg, for which she had been confined to her bed by her physician for six weeks, and that she did not desire to be similarly confined for the second attack. A large varix beginning in the calf and extending to the knee-joint level in line with the long saphenous, was acutely inflamed, hard and tender.

Diagnosis: Acute thrombophlebitis of lower leg.

Treatment: With the patient standing, the long saphenous was located in the thigh and tourniquets applied about four inches apart, the lower tourniquet being placed about six inches above the upper border of the thrombophlebitic process. The long saphenous was injected with 4 c.c. of 5 per cent sodium morrhuate, 2 c.c. in the lower, and 2 c.c. in the upper part of the vein segment isolated by the tourniquet. The tourniquets were removed at the end of five minutes, a pressure pad was applied to the thigh at the femoro-saphenous junction, and the thrombophlebitic area was supported with wide strips of elastoplast, which were placed so as to half encircle the leg. The patient was instructed to remain ambulatory. Before leaving the office, the patient

stated that her leg was a great deal less painful. Two days later, there was a marked change for the better. Redness and tenderness were gone from the thrombophlebitic area, and the vein could be palpated as a firm painless cord. The long saphenous was occluded from this area to within a few inches of the femoro-saphenous junction, where the varicosed condition of the vein seemed to cease. The vein presented the usual appearance of chemical phlebitis that is obtained in the injection method. There was no redness or heat, no excessive tenderness, suggesting septic thrombophlebitis. The subsequent course was uneventful. The occluded vein gradually diminished in size, the leg edema disappeared. A few additional injections were made into smaller varicosities in the calf to complete the cure.

Case 2: Mrs. K., case history No. 2,927. Two days previously, there was sudden onset of pain, with tenderness and hardness along the mesial side of the right thigh, a chilly sensation and slight fever. On examination the skin over the great saphenous was acutely inflamed from just below the knee to the mid-thigh, and the vein could be palpated as a swollen, tender cord.

Diagnosis: Acute thrombophlebitis of the varicosed long saphenous.

Treatment: Patient sat on the edge of the chair, and the segment of the long saphenous was isolated between tourniquets several inches above thromboplebitic area; injection of isolated segment with 4 c.c. of 5 per cent sodium morrhuate; tourniquets left on a few minutes and pressure pad applied to the groin and the inflamed vein supported with an Unna's paste boot. Six days later, I was able to show this patient at our local society meeting. The inflamed area was pale, gray, hard, not tender. The long saphenous above this area was swollen and hard to the femoro-saphenous junction. The patient has remained well and the vein occluded to date.

Case 3: Mrs. A., record No. 5,183. The patient was referred to me by Dr. C. J. Andrews in the early months of pregnancy for the treatment of varicose veins. Only the larger, more troublesome veins, below the knee-level were injected at this time. Several months later, the patient consulted me because of the spontaneous development of a tender, inflamed area under the knee. Examination disclosed an acute thrombophlebitis of a small varicose vein in the popliteal space. The continuation of this vein up the thigh was readily located, and the same was injected with sodium morrhuate between tourniquets. The patient left the office with less pain in the inflamed vein, and two days later examination showed complete remission of the inflamed area and occlusion on the injected vein above it. It is well to recall here the two cases of thrombophlebitis in pregnancy previously referred to, one of Homans and the other of Stone. These authors ligated and totally excised the inflamed vein.

Cases 4, 5, and 6—No. 2,813, No. 1,630, No. 5,184: These cases were so similar as to make their separate description unnecessary. Case No. 4 had extensive thrombophlebitis of the long saphenous, beginning just above the knee and extending half way down the mesial side of the thigh; Case No. 5, a policeman presented himself with an acutely inflamed varicose vein, about four inches in length, in the mesial side of the calf; Case No. 6, who had had varicose veins for twenty-five years, decided to seek treatment when a short, wide varix midst many grape-like varicosities in the calf of his leg became tender and painful, and remained so at the end of a week. The treatment of these three cases was similar and consisted of the injection of the long saphenous between tourniquets several inches above the inflamed area. The result was the same as that described for the other cases, the inflammation rapidly receding, with occlusion of the injected portion of the long saphenous vein. The only untoward reaction occurred in Case No. 6. This followed the injection, on the fifth day, of the very dilated vein segment at the knee-joint level between the therapeutically occluded segment above and the subsiding thrombophlebitic area below. The patient developed slight temperature, and the vein became an acutely inflamed, painful, tender and contracted cord. This complication may have been prevented by waiting a few more days before giving this treatment so near the thrombophlebitic area. However, such reactions commonly occur when a very large uncomplicated varix at the knee-joint is injected, as brought out in my former paper.[9] After a few days of pain, and difficulty in walking because of contraction at the knee, the symptoms rapidly disappeared and the patient made an uneventful recovery.

Case 7: Mr. V., record No. 3,009. This case is similar to the three previously described. However, when the patient was seen two days after treatment, the leg was still quite painful and tender, and the injected segment of the saphenous in the thigh was somewhat soft and evidently not completely occluded. The vein was re-injected with 2 c.c. of sodium morrhuate 5 per cent, without the use of tourniquets. Two days later, the expected results were obtained. The vein in the thigh was hard and the thrombophlebitic area quiescent.

Case 8: Anne J., colored, record No. 5,143. The patient had enormous varicosities of both legs with a complicating leg ulcer on the left leg. The work of occluding the veins of the left leg was about finished, and the ulcer healed when localized areas of acute inflammation developed across the anterior and mesial surface of the lower part of the right leg. The main branch of the saphenous leading to this inflamed area was injected with 2 c.c. of sodium morrhuate just below the knee. Three days later, the injected vein was a hard, non-inflamed cord, but the inflammatory areas lower in the leg had undergone softening and suppuration. The patient was hospitalized and the suppurative areas incised and drained. No further areas of thrombophlebitis developed; the injected branch remained a hard sclerosed cord, and in ten days the abscessed areas healed.

A few words as to the rationale of the procedure herein advocated. Customarily, the injection of a sclerosing agent into a varicose vein results in an aseptic white thrombus firmly adherent to the vein wall. This is so in spite of the fact that many of the injections are made in the neighborhood of badly infected leg ulcers, or into veins that harbor latent infection. One might, therefore, expect to get a simple aseptic occlusion when injection is made four to six inches above a thrombophlebitic area. The fear that the injection area may subsequently become involved in the septic process and cause its extension seems unwarranted. Surely the stagnant blood column above the thrombophlebitic area offers a far more fertile field for extension than the firm fibrous cord that soon replaces it after the injection procedure.

Furthermore, the acute thrombophlebitis that sometime results from the injection of a simple varicose vein furnishes nature's example of what has been advocated above for the treatment of septic thrombophlebitis. I refer to the severe reaction that sometimes complicates the injection method. The injected vein becomes acutely inflamed and resembles septic phlebitis. McPheeters and DeTakats[9] have referred to the condition, and I described it in a former paper under the heading "Ascending Thrombosis."[10] The characteristic course of events is a rapid extension of the thrombotic phenomena upwards until the entire saphenous is involved, and then rapid subsidence of the whole process. If complete occlusion fails, the vein inflammation is prolonged, but if a pressure pad is applied in the thigh and the saphenous further injected to complete the occlusion, and the patient kept ambulatory, a rapid cure is affected.

The orthodox treatment of thrombophlebitis of the lower extremities, with its weeks of quiet in bed, has been far from satisfactory and not without danger. The ligation of the saphenous in the thigh, as advocated by Homans and Stone, was a step forward. I question whether it is a sure means of preventing embolism in varicose vein cases, for, if McPheeters is correct, the circulation is usually reversed and embolism may occur through the deep system. This would explain the embolic deaths of ambulatory patients, and also the sudden deaths following the old operative procedure for varicose veins, in which the saphenous vein was ligated in the thigh. But ligation certainly lessens the chance of embolism in the recumbent position, and, more important, it greatly hastens the subsidence of the thrombophlebitic process. This is probably due to a relief from downward venous pressure, and is suggested by the relief these patients get from a pressure pad in the thigh, or from the recumbent position. The method, though simple, is open to the objection that it requires hospitalization, is often feared by the patient, and admits of embolism from the proximal side of the ligature.

The injection method proposed in this paper accomplishes all and more than the surgical ligation of the saphenous vein. A chemical and occlusive venitis is placed above the inflamed area, in effect a broad and permanent ligature; the stagnant blood is removed and the downward pressure relieved; the inflamed area is splinted into quiescence, and embolism is effectively prevented. The troublesome varicosity is permanently cured. The method is in

its infancy, and is the antithesis of present-day teachings. One can only say that, in a very limited series of cases, results have so far been excellent.

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THE MANAGEMENT OF HETEROPHORIA.*

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In any discussion on heterophoria it is well to remember that it is a symptom and not a disease. Therefore the mere existence of a slight muscular imbalance does not necessarily demand treatment. In all these cases we must consider the patient rather than the phenomenon. Some physicians still cling to the false idea that every heterophoria is a potential trouble maker and base their therapy upon that theory. Others remember only the asymptomatic cases and state that asthenopia rarely if ever results from a heterophoria. I feel confident that neither of these extreme views are correct and that common sense and a little experience will soon make us adopt a middle ground. While it is important to remember that heterophoria is a frequent cause of asthenopia it is just as essential to have in mind the occasional occurrence of an symptomatic heterophoria.

Bearing in mind this great variability in symptomatology the treatment of heterophoria must be individual and our first task is to decide whether or not the symptoms are being produced by the muscular imbalance. The coexistence of ametropia and heterophoria is quite common and often correction of the refractive error is all that is necessary; however in other cases no relief follows such treatment and our attention must be directed to the heterophoria. For such a differentiation a careful history is of great help. For example the panoramic headache described by Bennett is a common accompaniment of heterophoria yet rarely seen in ametropia. Confusion of vision with both eyes open yet clear with either one separately strongly suggests heterophoria as its productive cause. Reflex symptoms especially of the gastric type are more prone to occur from muscular imbalances than from errors of refraction. The vicarious positions of the head in hyperphoria are well recognized, for we have all seen marked hyperphorias completely masked by a tilt of the head. A careful consideration of these and other equally well known facts is of inestimable value in deciding upon the cause of the symptoms.

A good history is important but without an accurate diagnosis of the exact nature of the heterophoria intelligent treatment is impossible. It is not sufficient to know that a patient has a certain amount of heterophoria in the primary position at twenty feet without any knowledge of its behavior at the near range or in different directions of gaze. Duane in one of his last articles said: "Such data, however accurate, is altogether insufficient for a

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proper understanding of the nature of the case or for the application of suitable treatment. The deviation found is but a symptom, and to treat it as a substantive affection, without determining the conditions that underlie it, would seem as strange a thing as for a physician these days to treat a case of dropsy simply as dropsy without seeking for its cause." In an article three years ago after quoting this statement I said that "Since the truth of this statement cannot be denied, it behooves us to know not only that the symptoms are due to the heterophoria but also how to make an accurate diagnosis of the underlying factors producing the deviation. For the latter, we must know what information is needed and the best methods of obtaining it."

The usual working routine consists of (1) The amount of deviation for distance; (2) The prism divergence for distance; (3) The amount of deviation for near; (4) The near point of convergence. There are many methods for determining the muscular balance and it is not possible to discuss the relative merits of all of them. I believe that the screen and parallax test of Duane is the test par excellence for the measurement of pathological deviations and I urge all of you to make more general use of this simple test. Its value lies not only in its usefulness in the primary position but also in the ease with which it can be used in the different directions of gaze. I find the maddox rod useful in detecting slight amounts of hyperphoria and the phorometer a great timesaver for the rapid exclusion of the normal cases. A careful estimation of the near point of convergence is our most useful test at the near range for it gives us not only the nearest point on which a patient can converge but also the ease with which convergence is maintained. To these routine tests various others have to be added according to the indications. Exact knowledge on the behavior of the deviation in the different directions of gaze is frequently essential and as already stated the screen and parallax test in the six cardinal directions of gaze is our best method for obtaining this information. By the use of these five tests we have determined the amount of the deviation for distance and for near, and its comitance or non-comitance. Consideration of the treatment of the different types of heterophoria will prove the necessity for such a routine and also show the rationale of the methods employed.

EXOPHORIA

The vast majority of exophorias are caused by either a divergence excess or a convergence insufficiency or by a combination of these conditions. A pure case of divergence excess presents the following findings: (1) Marked exophoria for distance; (2) Excessive prism divergence; (3) Normal muscle balance at fifteen inches; (4) Normal near point of convergence. Divergence excess is thought to be of innervational origin due to an overstimulation of the center of divergence. Duane and many others of us believe the above findings are characteristic of this condition. Bielschowsky has recently taken issue with the correctness of this explanation for these exophorias and considers them due to an anomalous position of rest dependent upon purely mechanical factors.

Regardless of the exact causation we are all in accord as to the correct treatment when such findings exist. In my experience these divergence excess cases are not refractive in origin, prismatic correction is rarely successful and permanent cure by prismatic exercises is not obtained. Other authors have reported cures following prismatic exercises but in my hands this measure has only resulted in a temporary relief of the symptoms with little or no effect upon the deviation and a gradual return of the original complaints. The curative treatment of them is purely surgical and the correct procedure should consist in weakening the power to diverge. This we can accomplish most satisfactorily by a recession of one or both external recti muscles, depending upon the amount of the deviation. So long as the power of convergence is normal, I see no reason for shortening the internal rectus. Those exophorias produced by a pure convergence insufficiency present the following findings: (1) Normal muscle balance at twenty feet; (2) Normal prism divergence at twenty feet; (3) Marked exophoria at fifteen inches; (4) Remote near point of convergence.

Our treatment in such cases should be directed at building up this power rather than at weakening the ability to diverge. The varied etiology of this condition makes its treatment much more complex than that for divergence excess. Convergence insufficiency may be of accommodative or non-accommodative origin. Estimation of the refraction will determine this point and is the first step in treatment. To the accommodative group belong

those resulting from uncorrected myopia which are rarely productive of symptoms unless an attempt is made to suddenly force the full correction upon the patient for near work. Also in this group belong those corrected presbyopes and hyperopes who when they put on convex glasses find themselves enabled to read without exerting their usual quantum of accommodation. With this relaxation of accommodation comes a relaxation of convergence. Closely akin to the accommodative type is the so-called visual form which arises as the result of a marked inequality in the vision of the two eyes. This group of cases is usually asymptomatic unless injudicious refractive practices are employed. The presence of a hyperphoria is a frequent finding in convergence insufficiency; in fact it is often the cause of the lateral deviation. The proper treatment for this condition is first the correction of the hyperphoria since the lateral deviation often spontaneously disappears after the removal of the vertical one. I cannot stress too strongly the importance of correcting any existing hyperphoria before considering the convergence insufficiency.

According to Duane, approximately 60 per cent of our cases of primary convergence insufficiency are non-accommodative in origin. Proper refraction is therefore of no benefit to patients of this group. He lists the causes, in this group as: (a) "conditions causing general nervous or systemic depression (neurasthenia, hysteria, anemia, convalescence from exhaustion, illness and the like); (b) nasal obstruction (quite common); (c) some unknown cause acting upon persons whose muscular power and coordination otherwise seem normal." It is important for us to remember that a weakness of convergence is often just an indication of the patient's general condition and that attention to the general health constitutes the rational treament. When we have eliminated cases due to improper refraction and to impaired general health, we still have left a considerable number of healthy individuals who are incapacitated for near work on account of a subnormal converging power. It is in this class that prismatic exercises are of value. Duane and others have laid down precise rules to such exercises so it is not necessary to repeat them. The method used is not so important as the manner in which they are given. To be of any value the instructions must be exact in every detail. The patient must feel his own responsibility for the proper execution of these exercises. This he cannot do if they are given in a careless desultory manner.

I agree with Duane that "the use of prisms base in, to correct the deviation, is a procedure to be condemned, for while they may afford temporary relief it has seemed to me that in most cases such prisms ultimately increase the deviation and the symptoms." If these patients come to operation, the method of choice is a shortening of the internal rectus of one or both eyes and not a tenotomy of the external rectus.

Not an infrequent finding is an exophoria of equal amount for distance and for near with an excessive prism divergence and remote near point of convergence. In other words there is both a divergence excess and a convergence insufficiency. This tendency for periodic deviations to become continuous is well known and results from nature's efforts to make the deviation less troublesome; therefore a deviation equal in amount for distance and for near is usually one of long standing. The proper treatment then must take into consideration both etiologic factors. Whenever it is possible we should determine the primary cause and first direct our treatment at it, but oftentimes the secondary manifestation is so pronounced that it also demands treatment; in which case, simultaneous removal of both is advisable.

ESOPHORIA

Similarly most esophorias can be said to result either from a divergence insufficiency on a convergence excess, or a combination of these conditions. An insufficiency of divergence is characterized by: (1) High degree of esophoria for distance; (2) subnormal prism divergence; (3) normal muscular balance at fifteen inches; (4) normal near point of convergence.

Divergence insufficiency is of non-refractive origin and while not so common as divergence excess the small degrees are more productive of discomfort than are the slight over-activities of this power. The use of prisms base out for distant wear is, therefore, occasionally helpful; however if they are used constantly a secondary convergence excess intervenes, making it necessary to strengthen them at frequent intervals. The larger errors can only be satisfactorily corrected by operation, which should

be a shortening of one or both external rectus muscles.

Primary convergence excess, the commonest cause of esophoria, presents these findings: (1) Normal muscular balance for distance; (2) Normal prism divergence; (3) High degree of esophoria at fifteen inches; (4) Excessively close near point of convergence.

This condition is usually accommodative in origin but may be present without sufficient refractive error to account for it. These rare non-accommodative cases are occasionally due to hysteria or to some irritative condition producing spasm in general, but usually the cause remains unknown. The relationship between accommodation and convergence is so well understood that it is useless to dwell upon the necessity for refraction under a cycloplegic in this class of cases. Proper refraction corrects most of the convergence excesses unless they are sufficiently marked to warrant surgery, in which case the operation of choice would be a recession of an internal rectus. The combined condition of divergence insufficiency and convergence excess is frequently encountered and the proper treatment must take into consideration both conditions.

HYPERPHORIA

In no other type of heterophoria is accurate diagnosis so essential for the successful treatment as in hyperphoria. Since most hyperphorias are due to a paretic elevator or depressor careful measurement of the amount of deviation in the different directions of gaze is the first step in the diagnosis. Even those of low degree often show marked variation in the different fields, so before prismatic correction can be considered we must know the amount present in the different directions of gaze. With this knowledge we are in a vastly better position to judge whether any prism will be of help and if so what amount will be most beneficial. Failure to consider the variability of hyperphoria in the cardinal directions of gaze has led to much grief and uncertainty in the prismatic treatment of this condition. A hyperphoria worse in the lower fields is obviously more productive of asthenopia than one confined to the upward gaze. Therefore I urge you to be particularly careful to determine the exact amount present in the downward fields before prescribing a prismatic correction. Intelligent use of prisms is helpful in a large percentage of those of low degree. When the condition is beyond the realms of prismatic correction, operation must be considered but not until careful thought has been given to the etiological factor producing the paresis. In other words, surgery is only to be considered when we are sure that the condition is permanent and that the symptoms it is producing warrant its removal.

Many oculists shrink at the thought of operating upon a vertically acting muscle, either because of some unfortunate result or because operations are usually unsuccessful. It is my firm conviction that this belief has largely resulted from the following statement found in so many of our standard textbooks on ophthalmology namely "in hyperphoria if comitant the best operation is tenotomy of the superior rectus." The fault is not with the statement but with the oculist who fails to find that the deviation is usually non-comitant. It is true there is usually no gross limitation of motility but a careful measurement of the amount of deviation in the six cardinal directions of gaze will, in the vast majority of cases, prove the non-comitant nature of the hyperphoria. Therefore no one operation is suitable for all cases of hyperphoria and the type employed will vary according to which of the elevators or depressors are involved.

White has aptly said "many operative cases are not relieved, not because an operation was contraindicated or was improperly performed but because the wrong muscle or muscles were chosen on which to operate."

30 West Fifty-ninth Street.

A PRELIMINARY REPORT ON THE SIGNIFICANCE OF NEISSERIAN SMEARS FROM THE PROSTATE AND SEMINAL VESICLES.*

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In spite of all the publicity, education, and any advanced knowledge relative to this communicable and widely prevalent disease, there has certainly been no obvious decrease in the number of cases. The expansive educational efforts during the late War have borne but little apparent good. There still remains entirely too much secrecy about this so-called "social disease" that continues to cause untold human misery, suffering, complicated pathologic conditions, and, in addition, the loss of millions of dollars. We read articles in the newspapers about "moral turpitude," divorces on account of infidelity, illegitimate children, and look with apparent approval at nude or nearly nude women on the stage or in motion pictures, yet public information about venereal diseases continues to be held in the background. We have campaigns against war, accidents, anti-tuberculosis campaigns, and hosts of others, but isn't it high time we have a campaign against venereal diseases? Certainly the medical profession, health authorities, and the social worker realize the gravity of the situation, but how about the public at large? This matter assumes importance when Pelouze states that the older estimate of at least 80 per cent of all men in large cities contract gonorrhea at some time during their lives is probably highly charitable; 95 per cent perhaps would be nearer the correct figure. He further states that 20 per cent of all married men contract the disease, and 45 per cent of these infect their wives. He estimates that from 60 to 80 per cent of all the operations for diseases of the uterus and its adnexa are for lesions occasioned by gonorrhea.

A broader view is taken today by parents in telling their children early about sex, babies, and the like, yet fail to say anything at all later on about venereal diseases. It just seems to be the "Big Bad Wolf, but who's afraid?" Surely there is someone somewhere who is responsible for enlightening our young people. At least this knowledge could be properly imparted in our high schools. This would certainly take care of situations in which parents have neglected an important duty or just did not know the necessary facts. Our young men and young women grow up thinking this is a disease of filth and is not to be found among the so-called "best people." Learning from experience by contracting a venereal disease is a heavy penalty to pay for unnecessary ignorance when a little plain talk or proper education could have averted a very serious catastrophe. Instead of a "barrel of free liquor on every corner," as advocated by the mayor of a popular city sometime ago, I would rather see a free venereal dispensary passing out literature, giving treatments and preventive advice. This idea would certainly not meet with the approval of some of our so-called "moral leaders" or "reformers," as they feel it would encourage immorality and, besides, the contraction of a venereal disease (so they seem to think) is a "Divine" punishment for this type of sin. They do not stop to consider that an individual so infected is a menace to others and that the innocent are liable to suffer as well.

The zeal and energy which was expended in closing well localized brothels was an ignorant, useless procedure, and did more harm than good. It scattered, for awhile, the occupants of these houses throughout the community—beyond proper police inspection—and thus made control of the spread of venereal diseases from this source more difficult. Further, it caused our young men to seek the company of young women in the upper strata of social life in order to expend their passionate desires, and unquestionably this has contributed greatly in spreading the disease in this direction.

One of the many evil and sickening results of that "noble experiment" and great American political curse, Prohibition, was the increased drinking among our young people which frequently led to a state of wild hilarity and a lowering of moral behavior. Naturally, one would expect with this unharnessing of the sexual urge to find this destructive "social disease" marching onward with greater rapidity. In

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the group of cases reported herein, 88.3 per cent admitted they were drinking at the time the disease was contracted and neglected to use precautions they normally would have in a sober condition.

It is a rather common occurrence for physicians to number among their venereal cases, young women who have a high social standing and are very popular in the community. Some of the cases present about as sad a picture in the practice of medicine as the physician comes in contact with. The public knows very little if anything at all about this phase of the venereal problem, although quite aware of the somewhat widespread prevalence among males, which they regard as nothing worse than a "bad cold." Yes, and sorry to say, some of us regard it apparently in the same light.

Contributing also to the spread of gonorrhea is the fact that a woman may have an acute or chronic infection and honestly be unaware that she has a disease, due to the fact that she is accustomed to the pre- and post-menstrual moisture or secretion of mucus, and, consequently, a discharge may not worry her as it does in the male.

Pharmacists continue in their attempt to treat venereal cases over the counter. The number of patients treated in this manner is evidently enormous. Certainly, in view of the fact that tests are not generally made to determine that these cases are apparently well, one would expect a high percentage of latent infections.

The physician who accepts a venereal case for treatment has a very peculiar and important responsibility. First of all, he should stress the seriousness of the disease to his patient and take a real interest in the case. Get the patient interested by allowing him to look through the microscope at a stained smear and explain as you go along with the case why you do this and that. This will certainly help to bring about a better co-operation from the patient. Further, the physician should not discharge the case as "cured" until he has utilized the several tests for "cure," and then should be honest and frank enough to advise against transference of the disease for some months after he thinks a "cure" has been obtained. We know that a great number of infections are transferred during the latent period of the disease, or after the patient has been told that he is "cured." Pelouze states that most males contract the disease from "cured" women. There is no doubt that some of us release our patients entirely too soon, without using a reasonable amount of "test cures," and herein lies upon our shoulders part of the blame for the spread. A large part of the blame unquestionably rests with the patient, for it is frequently a difficult matter to secure co-operation, especially when the disease is under control. As soon as the discharge ceases and there are no apparent subjective symptoms, away they go, thinking all is well. Records will show that it is a difficult task to keep all of these patients under observation for any great length of time or carry them through to a completion of the case. Unless the physician is very much interested in venereal work and can maintain the patient's interest, this constant observation and check-up really becomes monotonous, which finally leads to a complete separation. These patients have heard so many different tales about gonorrhea and the so-called twenty-five-cent "cures" that it is imperative for the physician to tell him the true facts at the first visit.

In the forty male cases herein reported, involving 4,485 days of observation, 267 smears were taken, 217 being from the prostate and seminal vesicles. The minimum period of observation was two months, the maximum eleven months, and the average 112 days. The minimum time of "cure" was three days, the maximum nineteen weeks and two days, and the average time sixty-four days. These cases were seen daily at the office until the disease was under definite control; then every other day, with a gradual lengthening of this interval. Each visit included a treatment or inspection and at least a macroscopic examination of the urine, using the first and last portions. As the discharge decreased or ceased, microscopic examinations were made of centrifuged specimens. Sounds or bougies were passed in all cases. In addition to the above, particular importance was placed on the prostatic and seminal smears, obtained by gentle but firm massage just as soon as it was deemed wise to do this. It was felt that a minimum number of consecutive negative smears obtained at close but safe intervals should have a rather important bearing as to when a patient was "cured" of gonorrhea. It was also felt that if this could be determined with a reasonable amount of consistency in order to allow dependence in the procedure and results, it would restrain us from discharging our patients with a latent infection, and

	Jan.	Feb.	Mch.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1 W.M.S.38 Acute - 24 hrs.						27 → P			5 9 N P	19 17 19 N N N	17 N	
2 W.M.S.22 Acute - 3 days	17 → P				10 P	1 6 12 17 N N N N						
3 W.M.S.24 Acute - 6 days	3 → P		21 P		4 10 15 18 P N N N	14 N						
4 W.M.S.25 Acute-Complic. 5 wks.					5 → P		17 13 18 27 N N N N N	2 N				
5 W.M.S.34 Acute-Comp. 5 wks		→	15 24 30 P N N	5 20 N N		29 (1933) N						
6 W.M.S.33 Acute - 5 days									27 → P	24 26 Ncs N	6 8 15 Ncs !! N	
7 W.M.S.25 Acute						6 → P		6 15 31 P P P	24 30 N P	13 18 21 N N N	3 N	
8 Col.M.S.19 Acute - 3 wks.								→	17 11 (1933) P N		28 N	5 10 N N
9 W.M.M.35 Chr-Comp. 8 mos	→	23 P		15 (1933) N	5 13 23 N N N	2 14 30 N N N	12 N	1 N	16 N		12 8 (1933) N N	28 N
10 W.M.S.25 Acute -								→	20 P	27 N	4 10 N N	
11 W.M.S.21 Acute - 9 days						19 → P		6 15 18 N N N	20 N	1 4 N N		
12 W.F.M.19	7 23 N N	16 27 N N	13 N					22 → N	6 P	10 17 29 31 N N N P		30 N
13 W.M.M.21 Acute - 17 days							1 → P	LEpididymitis 4. Pleurisy	13 20 23 N N N	3 10 25 N N N		
14 W.M.M.21 Acute - 24 hrs.	7 23 N N									→	7 P	5 10 20 30 N N N N
15 W.F.M.21 Acute						21 → P			7 13 22 N N N	10 18 N N	7 15 N N	
16 W.M.M.29 Acute - 24 hrs.	5 26 N N	13 N	27 N							20 → P		15 N
17 W.M.S.35 Acute - 12 hrs		7 13 15 29 N N N N	2 N								→	16 P
18 W.M.S.26 Acute - 3 wks.		→	23 26 N P			1 11 23 N N N						
19 W.M.M.33 Acute - 1 mo.		7 → P		8 P	4 15 N N	1 N						
20 W.M.S.29 Acute - 48 hrs.		→	4 P	13 N	1 15 20 N N N	4 N						
21 W.M.S.30 Acute - 24 hrs.					→	17 P		24 31 N N	8 N			
22 W.M.S.31 Acute - 72 hrs.				12 23 → P Ps	5 16 31 Ps N N	8 11 N P	12 19 25 N N P	1 4 9 12 25 N N N N N	7 27 N N			
23 W.M.S.21 Acute - 12 days					→	22 P	23 31 N N	6 N				
24 W.M.S.23 Acute - 8 wks.						→	16 P	8 17 28 N N N	8 15 N N	16 N		
25 W.M.M.26 Acute - 24 hrs.		→	18 P		14 P	13 P	6 17 22 N N N	9 13 20 N N N				
26 W.M.S.22 Chr. Comp. - 5 mos.		→	5 10 P Epididym.	15 23 26 N N N	15 20 N N	2 N						
27 W.M.S.18 Acute - 48 hrs	10 N							→	29 P	27 N	7 N	1 N
28 W.M.S.23 Acute - 2 wks →	7 P	9 27 N Epididym.		23 P	7 15 N N		10 15 20 N N N	2 N				
29 W.M.S.21 Acute - 1 wk.	19 N	28 N	13 N								→	28 P
30 W.M.S.28 Acute - 9 days					5 → P	20 N	11 P		16 29 N N	6 10 N N		
31 W.M.M.27 Acute - 3 wks.	3 23 N N										6 → P	28 N
32 W.M.M.31 Acute - 24 hrs.							27 → P	28 30 P N	5 13 N N			
33 W.M.S.24 Chr. - 6 mos.	8 N	7 N	26 N	1 9 N N	17 27 N N				7 → P			9 N
34 W.M.S.28 Acute - 48 hrs	17 23 N N	2 7 N N								22 → P		
35 W.M.S.19 Acute - 9 days	19 N								18 → P		29 N	15 27 N N
36 W.M.M.20 Acute - 8 wks.		2 24 → P Ps		9 22 30 N N N								
37 W.F.M.20		24 → Ps	6 P	26 30 N N	17 22 30 N N N	17 N						
38 W.M.S.23 Acute - 9 days								11 → P	19 Epididym.	17 N	1 5 15 20 N N N N	2 N
39 W.M.S.34 Acute - 48 hrs.		12 → P		13 23 30 N N N								
40 W.M.M.34 Acute - 3 days		17 → P			2 13 21 N N N							
41 W.M.S.25 Chr.	5 12 N N					31 15 18 30 N N N N	5 N	24 N				6 → P
42 W.M.S.28 Acute - 24 hrs							27 → P		5 9 N P	14 17 19 N N N	17 N	
43 W.M.S.27 Acute - 24 hrs →	27 25 30 P Ncs	5 8 12 26 7 Ncs N N	N									

→ = Date of first visit P = Positive Ps = Suspicious. N = Negative Ncs = Neg. Smear from Centrifuged Spec.

aid in turning out a larger percentage of well cases. In order to have a check on this work, the smears were sent to the laboratories of the State Board of Health. Based upon the clinical findings and the State reports, the following conclusions were reached in regard to the reliability of smears from the prostate and seminal vesicles in so far as indicating the absence or presence of the gonococcus:

(a)—In the average acute case (initial infection) following a normal course, at least three consecutive negative smears should be obtained.

(b)—In chronic cases, cases with history of repeated attacks, and those with complications, at least four consecutive negative smears should be obtained.

Although this paper was to consider primarily the male, a word might be said in regard to the female. From the standpoint of the female anatomy, it is obvious that the proof of "cure" is a more difficult matter than in the male. Pelouze states that "those who pronounce women 'cured' have a degree of optimism that far outruns their medical science." He also says that "there are gynecologists of wide experience and undoubted veracity who believe that female gonorrhea rarely is cured." It is imperative, therefore, to exercise the greatest possible care in these cases and not to be too hasty in assuring recovery,—be just a little more timid. Be just as honest and frank with these women as with the men in telling them that we do not know they are well, but only think so, and that they should use utmost care in order not to spread the disease. This plain talk will undoubtedly be of value, for surely most of them would not be so careless as to deliberately expose one to a possible infection. Realizing the great chance of error in female gonorrhea, it is my policy not to release a case until at least six consecutive negative smears have been obtained, divided in relation to the menstrual period, pre- and post-. Each of the six smears should contain secretion or moisture from the cervix, vagina, and urethra. It is imperative that routine rectal slides be made in all cases as it has been demonstrated by one of our largest venereal clinics that the percentage of positive smears from this area is exceedingly high.

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101 *Liberty Street.*

TUMOR OF THE KIDNEY—WITH ESPECIAL REFERENCE TO THE TOO-FREQUENT DISREGARD OF ITS CHIEF CLINICAL MANIFESTATION.*

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The fearful toll of renal neoplasm continues its reproachful challenge to the profession.

The menace of malignancy is nowhere greater than in the urinary tract. Hidden within the recesses of this system, cancer, especially of the kidney, may begin insidiously and progress to ineradicable extent with little or no warning of its existence. The unhappy victim then is doomed without even the opportunity of assembling such slender defensive forces as medicine might have to offer. More commonly, however, it gives some intimations of its presence, generally late but occasionally early, and the issue then turns upon the alertness with which these stigmata are recognized as signals for swift decisive action. Here lies the real clinical problem of tumor of the kidney, and it is the affair not so much of the urologist or the pathologist as of the general practitioner and the patient himself. The subject is, therefore, one of universal interest, filled with grave responsibilities which it is the particular object of this discussion to emphasize.

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It would perhaps be interesting, and yet of questionable value, to review the varying conceptions of the pathology of renal malignancy and to attempt some classification thereof. The subject is filled with uncertainty and surrounded by an enormous literature, a detailed survey of which would lead

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to nothing more than hopeless confusion. This is due to no lack of earnest and intelligent study but to the perplexing nature of the lesion itself. Not infrequently a single growth will present sharply differentiated microscopic pictures at different levels. Equivocal forms are so common that Young, from a great experience, suggests that descriptive designations such as carcinoma, hypernephroma, papillary cystadenoma, and many others be abandoned and the single term nephroma be substituted to cover them all. From a pathological viewpoint this would be most desirable. From the clinical angle, however, it would seem necessary to segregate certain groups, and here the simple classification of Cabot admirably avoids the controversial zones and establishes a basis for sound practical consideration:

I. Tumors of the kidney parenchyma in the adult.

II. Tumors of the kidney pelvis.

III. Tumors of the kidney in infancy and childhood.

As these three groups present certain problems distinctive to each, it will be essential to consider their general characteristics further. The tumor of the kidney parenchyma in the adult, which rarely occurs in early life, is the type responsible for most of the uncertainty of classification and is the lesion which Young has in mind especially, though he appears to extend his term nephroma to cover the pelvic growths also. Commonest among these solid tumors of the renal substance is the hypernephroma of Grawitz, so-called because of its supposed origin from adrenal rests, a theory once widely accepted but now generally discarded. Sharply encapsulated, often lying dormant for years, this tumor is still regarded by some as primarily benign, its final malignant course being stimulated by an unknown factor which does not manifest itself as a rule, until after the fortieth year of life. The consensus of opinion, however, is emphatically against the assumption of any benign phase whatsoever in the life history of this growth which, nevertheless, is universally recognized to pass through periods of singular inactivity, a phenomenon having an important bearing upon the interpretation of one of its major clinical manifestations. Departing from this basic type one may at times encounter variations justifying in isolated instances all the designations appearing in the literature, until the opposite extreme is reached in the presence of the frank outspoken, though rare, alveolar carcinoma with its absence of capsular confinement and its rapidly fatal invasive characteristics. Moreover, as already intimated, all these forms may appear in the same tumor, which has aroused the interesting speculation whether such a picture represents the simultaneous occurrence of several distinct tumors or the divergent effects of a single stimulus upon the diffent kinds of epithelium present in the kidney.

Without further regard for these debatable points, it is sufficient for practical purposes to bear in mind that these tumors, however variable they may be in morphology or clinical malignancy, are all carcinomatoid in type and are to be met accordingly, namely, by total ablation as promptly and as thoroughly as possible. Furthermore, they present in common certain trends or tendencies which have an important relationship to the bedside problems of diagnosis, prognosis, and treatment. Beginning within the kidney substance, they may extend beyond its bounds into the perinephritic fat, which must, therefore, be removed *en masse* in every instance if possible. By enlargement in the direction of the pelvis and its ramifications, certain characteristic pyelographic deformities are produced and are of the utmost diagnostic significance. The strange and disconcerting habit of extending stalk-like processes into the renal vein, or even into the vena cava, introduces a surgical consideration of much moment. The close relationship of the tumor cells to the capillaries of the kidney makes their dissemination through the blood stream more common than through the lymphatics, which is the reverse of what is usually true of carcinoma. Metastasis is, therefore, very common and sometimes widespread, involving especially the lungs, liver, lymphatic structures, and the osseous system. Commonly the patient is killed by the metastasis before the kidney itself has undergone destruction; or the first intimation of the existence of a renal lesion may occur at the site of a metastasis and be totally misinterpreted, as in the spontaneous fracture of a long bone. Finally, neither the size nor the microscopic characteristics of the primary growth will give any definite clue to its present or future potentialities. Given two lesions apparently identical, the course and prognosis may yet be quite different and the most careful study has, as yet, failed to disclose any explanation for this phenomenon.

Tumors of the pelvis of the kidney are usually

specifically unlike those of the parenchyma, though they may at times approach each other in microscopic detail, and when the growth is very extensive it may then be quite impossible to determine its point of origin. The pelvis is simply an epithelial-lined sac which acts as a pumping station for urine emerging from the kidney and, as might be expected, its lesions closely resemble those of the bladder which acts as a reservoir at the opposite end of the ureter. The growth commonly found here is a papilloma or papillary carcinoma, beginning in the mucosa and projecting into the cavity of the pelvis. The pyelographic evidence of its existence, which it furnishes, is, therefore, different from that of the parenchymal growth, being in the nature of a filling defect rather than a distortion of outline, though, again, it must be said that an extensive growth of either type may completely obliterate such lines of distinction. It unfortunately happens, however, that a differentiation between the two is not, as might be presumed, a matter of mere academic interest but a clinical detail of extraordinary importance. Fragments from the friable papillary mass in the pelvis become detached and float downward with the urinary tide, forming implants along the ureteral wall or in the bladder itself. Removal of the kidney and upper ureter, which is the indicated procedure for tumors of the parenchyma, will not be sufficient here; the entire ureter, together with a cuff of the bladder wall, must also be taken away, an operation of much greater extent. A dramatic illustration was presented in a recent case which came under my casual observation. A large tumor of the kidney had been removed without realization of its pelvic origin. Hematuria recurred later and was found to be coming from the ureteral stump. Secondary operation was performed by another surgeon, who found several inches of the ureter filled with implants, and who removed this segment well beyond the area of involvement. Again recurrence developed and a third surgeon excised the remaining inch or two of the ureter and also a portion of the bladder. The patient is now dead.

Consideration of tumors of the pelvis should not be concluded without some reference to the squamous-cell carcinoma which occasionally occurs in this locality. This tumor does not send out implants, and simple nephrectomy is all that is required here. Though it does not bleed as freely as the papillary growth, it has a particular tendency to ulcerate easily and to cause obstructive signs by peri-pelvic infiltration. Its particular interest in the present discussion, however, lies in the fact that it is the only malignant process in the kidney for which any specific etiologic background has been developed beyond those vague and general biological considerations applying to neoplasms in general. There is no unanimity of opinion with reference to this presumption, but there seems to be increasing evidence that chronic irritation from infection, but especially from calculus, plays an important role in the development of this rather rare lesion. If this link actually exists, it will lend additional significance to the presence of stone within the urinary tract and also to any process, such as leukoplakia, which may be recognized as expressive of chronic irritation from any source.

The tumors thus far described are almost, though not absolutely, unknown in early life; on the other hand, infancy and childhood not infrequently present in this region a characteristic growth that but rarely appears beyond the second decade and that is most commonly found in the first few years. Here, again, there are distinctive features fundamentally affecting the clinical picture. The classical monograph of Wilms contributed much to our knowledge of the renal tumor of childhood, in recognition of which the lesion is now generally described by his name. Though of a general sarcomatous type, this tumor is actually an embryoma containing usually a multiplicity of tissues developing from abnormal embryonic rudiments. Within the abundant immature connective tissue stroma may be found epithelial-lined tubules or cysts, smooth or striated muscle, cartilage, skin, hair, or teeth. Occasionally the tumor arises within the kidney itself; usually it springs from the adjacent retroperitoneal area and grows into this organ, being, therefore, as has been often said, in, but not of, the kidney. As a result of this developmental peculiarity, the kidney, which becomes ultimately a sort of shrunken appendage of the large neoplastic mass, is affected in a manner quite different from that typical of the adult types of tumor. The pyelographic detail may be but slightly altered. There is but little tendency to become hemorrhagic or to involve the pelvis; hence the all-important urinary manifestations may be totally absent and the clinical picture limited to the

tumor itself and such pressure effects as it may exert upon neighboring structures. The tendency to metastasis is not very pronounced, yet the growth is extremely malignant, and recurrence after operation is usually prompt, probably due to the fact that the strands of tissue extending into the retroperitoneal space where the tumor originated are rarely, if ever, completely removed, either because they are inconspicuous or else because they are inextricably attached to other vital parts.

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The life expectancy of the victim of renal malignancy can be inferred from what has been said. So fatal is this disease that one does not give serious thought to the occasional benign growth presenting itself in this region, adopting the universally accepted principle that any tumor of the kidney, diagnosed as such, shall be immediately and drastically attacked. This treatment consists of nephroureterectomy for the papillary pelvic tumors and nephrectomy for all other types. In a few rare instances a single accessory metastasis can be removed along with the primary growth; in general, however, the existence of metastasis is a contraindication to operation, and the same is true if exploration discloses extensive local infiltration and fixation. In such cases total surgical ablation is impossible and worse than futile in the attempt. In all other cases, if there is a functioning kidney on the opposite side, surgery should be undertaken and should be made as radical as possible. The technique will be the affair of the individual operator. In our own experience the transperitoneal approach is preferable, permitting a more ready and complete removal of the perinephritic fat and areolar tissue and also often making primary ligation of the renal pedicle possible, thus reducing the likelihood of the manual expression of malignant cells into the circulation in the course of the necessary manipulations incident to the nephrectomy.

Irradiation, as Keyes remarks, has been singularly inefficient as to cure in this group of tumors and is rarely, if ever, considered in the treatment except as a pre-operative measure and especially in the embryomas of childhood. The immature cell of this latter growth is highly radio-sensitive at the outset, though it does not remain so. The radium pack or deep roentgen therapy will, therefore, often cause marked, perhaps total, recession in this tumor, permitting operation under more favorable circumstances. In some instances cortical tumors in the adult will behave similarly, and the very recent development of a more vigorous technique has been productive of some rather startling results, visible in certain cases now under our observation. It is too early to predict where this work will eventually lead, but it may be stated emphatically that it cannot as yet be permitted to modify an attitude of vigilant radicalism. Subsidence of the growth, if it occurs under saturation by the ray, must not be allowed to lead to any false hopes. Operation should, nevertheless, be performed and reasonably promptly, as the tumor will certainly recur and will then be found to have developed a decided resistance to the rays.

Even under the most heroic treatment conceivable, the mortality rate remains at a frightful level. Sooner or later 70 to 80 per cent, perhaps more, of the victims of the adult forms of renal malignancy will succumb. The operative mortality itself varies, in good hands from 6 to 33 per cent (Hyman), being probably in the neighborhood of 10 per cent in the best clinics (Cabot). The percentage of cures varies in different series all the way from 4 to 25 per cent. The cause of this wide discrepancy is very apparent. One never knows when to record a cure in this disease. Many patients alive at the end of a three-year period are dead before the end of five years from late metastasis. Such metastasis may appear as long as ten years after operation, even though there is no suggestion whatsoever of local recurrence. Erratic clinical behavior is the rule rather than the exception. A tumor apparently early and sharply localized may be totally removed in an individual who has no clinical or X-ray evidence whatsoever of metastasis; yet metastasis may occur and be fatal months or years later. On the other hand, a case that should go rapidly downhill will linger for years, apparently free. I have at this time under observation a patient whose renal vein was filled with tumor cells which probably extended beyond into the vena cava, though I did not carry the exploration actually into the great vein as has been done by some bold operators. With the circulating blood in actual contact with friable tumor tissue it would seem that multiple metastasis must speedily occur. Yet this patient more than three years after her operation is apparently well; actually she will probably die before another three years. In another case, which showed definite infiltration

in the mass of fat removed with the kidney, the patient lived four years, continued in excellent health, was free of any sign of recurrence or metastasis, and died suddenly of a cerebral complication. An autopsy was not performed, but I strongly suspect the cerebral complication was a late isolated metastasis to the brain.

This gloomy picture becomes even more so in the presence of the embryoma of infancy. The mortality rate here is well above 90 per cent, operation or no operation. One may be inclined to question the rationale of any surgical intervention in the face of such statistics. Yet an occasional case will be saved, and hence nephrectomy should always be performed if it is technically possible. It may be interesting to note that among the few cures recorded throughout the world, one passed through our hands at the Stuart Circle Hospital. Nephrectomy was performed by Dr. Charles R. Robins upon this child twelve years ago at the age of twelve months. It is still alive and probably permanently well. Prompt local recurrence, not late metastasis, is the rule in the embryomas.

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Such, in the most general terms, is the nature of malignancy within the upper urinary tract. In what manner does this devastating process exhibit itself so that its existence may be suspected by the patient or the physician? Unfortunately, it is neither prompt nor frank with this disclosure, and when to this fact is added a not infrequent disregard of such warning as it may issue, the outlook becomes unpleasant indeed, and must necessarily remain so, as long as these circumstances obtain.

According to the advancement of the lesion or the habit of the particular growth, the clinical picture of tumor of the kidney in the adult may be only too obvious or it may be so vague and inconclusive as to tax the wits of the most resourceful diagnostician. The classical triad—hematuria, pain, and tumor—is useful and even important for emphasis, but it must be borne in mind that any or all of these signs may be absent and secondary toxic or metastatic symptoms may lead one far astray. Gastro-intestinal disturbance may be so marked as to give an impression of a primary focus here. The occasional significance of spontaneous fracture of a long bone has already been mentioned. Cough and hemoptysis from a pulmonary metastasis, or headache and failure of vision from a cerebral metastasis may overshadow, sometimes precede, the renal signs. Edema of the legs from obstruction to the circulation may be delusive and in the same category should be placed the spontaneous unilateral varicocele which may be quite puzzling until one recalls or actually observes the manner in which a renal growth exerts direct pressure upon the spermatic vein. Of particular interest is the fever, not infrequently present and occasionally the only symptom. This fever is independent of the element of infection and is said by some to be due to rapidity of growth or the presence of metastasis, or to hemorrhage or necrosis in the tumor; more probably it results from an abnormal product of neoplastic metabolism for which Israel has suggested the name "pyrogenic substance." The possibility of nephroma should be suggested by any case of persistent obscure fever. It may be recalled that a striking illustration of the importance of this was given by Hamman, of Baltimore, in an address in Richmond a few years ago.

Leaving these more indirect, and sometimes confusing, manifestations of renal tumor, the so-called triad may be more closely inspected. *Pain* of some degree is primary in 10 to 15 per cent of cases and is ultimately present in at least 40 per cent. It may be a dull lumbar ache or it may be sharp and neuralgic from involvement of nerve trunks, or it may assume the dimensions of severe renal colic from the passage of clots down the ureter. When it is constant and neuralgic it will generally be found to indicate that the growth has broken through its capsule, has invaded the surrounding tissues and is inoperable.

Tumor is present and palpable in a large percentage of cases—according to Hyman in 75 per cent. The frankness of this finding is, of course, largely influenced by the the thickness of the abdominal wall. A mass of any size means an advanced lesion; definite fixation of such a mass almost invariably represents a hopeless condition. With the exception of the cachexia incident to the late stages of all types and the pressure signs resulting from the gross mass itself, tumor is practically the only symptom of the embryoma of childhood. As this growth is essentially outside the kidney proper, the appearance of the urine rarely gives any indication of its presence. Commonly the

mother in handling her infant suddenly realizes that the increase in the size of its abdomen is due not to rapid normal development but to a lump which she can feel beneath her hand.

The dominant symptom of *hematuria* has been reserved for the last. Primary in 40 to 50 per cent of adult cases, ultimately present in 80 to 90 per cent, its importance cannot be over-estimated. It is due either to congestion of vessels within the kidney substance from mechanical pressure; or to the eruption of a parenchymal tumor into the pelvis; or to the presence of a primary growth in the pelvis. There may be only a few microscopic cells in the specimen or there may be a profuse hemorrhage, with or without clots. The bleeding may be quite painless or there may be a dull ache or a severe colic. The symptom may be early or late. Nephroma may be present a long time before any hematuria occurs. The bleeding is usually intermittent. The tendency of renal tumor, not infrequently to lie dormant over considerable intervals, has been noted. Hematuria may subside and not recur for a long time—perhaps a period of years. Patient and physician may be lulled into a sense of security while this opportunity, perhaps to save a life, is slipping away.

The essence of our discussion rests here. If any greater hope is ever to be offered to these unfortunate patients, it will lie in the direction of earlier diagnosis and consequent earlier application of radical surgery. If earlier diagnosis is to be effected at all, it must hinge largely upon an unfailing and universal recognition of the possible dire significance of blood in the urine and the grave responsibility this finding immediately imposes upon any physician who comes into contact with it. The words of Hyman are very apt: "The ultimate lowering of the mortality rate of this form of malignancy (which now claims 70 to 80 per cent of its victims) will be brought about not by surgery or roentgen-ray or radium, but by a campaign of education of the lay public and also of the physician. What a reduction in the mortality rate could be effected by a careful study after the first hematuria!"

It is, of course, most desirable that the physician be familiar with the other clinical suggestions of the existence of renal tumor, but even if he overlook all these and yet be ever alert in the presence of hematuria, a great stride forward will have been made. For years the urologists of the country have been preaching this doctrine, in season and out, and it would seem that by now the lesson must have been thoroughly learned. The symptom is dramatic and unmistakable, the warning clear and unequivocal. Yet it still goes unheeded to an extent that is puzzling and disheartening to those who are too often witnessing the tragic consequences of this attitude of unconcern. Certainly it is true that a majority of the profession have been fully aroused and are admirably prompt in getting these patients under the proper supervision, but a large minority continue inattentive. It will sound to this enlightened audience unbelievable—nevertheless it is true —that not only microscopic blood, but even gross hematuria, is still extensively treated with turpentine, tincture of guiac, cream of tartar, and other drugs, with no effort whatsoever to determine its source and significance; also with great satisfaction in the efficiency of the treatment and dismissal of the patient from further consideration when the bleeding suddenly stops—to recur again in weeks, months, or years, with the lesion now advanced to that extent toward inoperability.

Unless it is immediately threatening to life, which is but rarely true, there is but one treatment for hematuria, and that is concerned not with the symptom itself but with its cause. A sweeping investigation must be made in every instance. Often some relatively trivial explanation will be disclosed. In many other instances grave lesions will be uncovered, and chief among them, malignancy in the kidney or elsewhere in the urinary tract. Since there is no clinical means whatsoever of differentiating between these two groups, it should be an inflexible rule to consider every case in the latter until specifically proven otherwise. The details of the technical procedures that play so large a part in establishing the ultimate diagnosis have no part in the present discussion. When the physician simply recognizes in hematuria an imperative demand that such a diagnosis be reached without delay, he has done his full duty. The rest is the affair of the urologist.

MILK SICKNESS.*

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At Grace Hospital, Banner Elk, N. C., situated at about 4,000 feet above sea level, drawing patients from several mountain counties of northwestern North Carolina, eastern Tennessee and southwest Virginia, we have frequently confronted a problem as to the etiology, symptomatology and treatment of a condition or disease known throughout the years to the mountain people as milk sickness. The disease is said to be most common in Ohio, Indiana and Illinois, but occurs in Kentucky, Tennessee, North Carolina, Virginia and Georgia. It has been reported as far west as Missouri and as far north as Michigan.

The disease, called "trembles" in animals, is characterized in them by indifference to food; at times they will try to drink but will not move about; they hold their heads low and watch the ground closely while walking, for fear of falling. They are unable to walk straight and often do fall and lie panting, unable to rise. This is followed by a stage of great weakness and clonic contractions. If the animal gets up, its legs seem too weak to hold its weight. The neck is usually twisted to one side; the muscles quiver; the hind legs are stiff and the eyes are protruded and red. The gastro-intestinal tract is distended with gas. Finally, the animal becomes unconscious and death soon follows. Acute symptoms are often brought on by violent exercise and over-heating.

In man, the principal symptoms are loss of appetite, constipation, pain and stiffness in legs, languor, fatigue, nausea and vomiting (which may be continuous), the tongue is red, the breath smells of acetone, the temperature is sub-normal and the blood pressure is low. There is a lump or heaviness felt in the pit of the stomach which is not relieved by vomiting and is felt until the patient is well. Over-heating or violent exercise will bring about an acute stage of the disease, as it does in animals.

As to the cause of the disease, in the past, many theories (some of them purely imaginary) have been advanced in the mountains of western North Carolina,—one being that an emanation from the soil (some people believe a poisonous gas) rises from the soil at night and settles on vegetation, and cattle are poisoned when fed the vegetation early in the morning and, at times, during the night. Various minerals were formerly thought to produce the poisonous gas. Among them were mentioned iron, copper, arsenic and aluminum. Mushrooms and other fungus growths were suspicioned. Poison ivy was accused.

However, the plant most frequently mentioned and now positively proven by the United States Department of Agriculture and others to be the cause of "trembles" and "milk sickness" is the white snake root (eupatorium ageratoids). This plant will not thrive in sunny, hot places, but is found in rich soil in thickly shaded areas near streams with sandy bottoms. It will grow on the top of mountains but must always be shaded. It is found in this country from the middle of June to well up in November. A white blossom is formed usually in September; the stalk is about three feet high and has a square stem; the leaves are roundish oval and taper to a point. They are very smooth and oily when green. The stalk wilts and turns brown very quickly after being pulled. The plant possesses trematol and this produces the severe acidosis of the disease.

Many experiments have been made with this plant to prove beyond a doubt that it is the cause of milk sickness. Among them are those performed by the United States Department of Agriculture by which well animals were given white snake root and developed the same symptoms of animals with trembles. Similar results have been obtained by others, F. A. Wolf, R. F. Curtis and B. F. Kaupp. Dr. Arthur J. Clay, writing in Tice's "Practice of Medicine," relates an instance in which he procured three head of healthy stock, two healthy cattle and one sheep, fenced them in a barren lot and compelled them to eat the plant. In three days all were dead, the symptoms and signs being the same as in the cattle that had previously died. Animals do not like

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the plant and eat it only when no other green stuff is available. It has long been a popular belief that drying the plant in the sun destroys the poison; however, this idea has been proven erroneous by an instance in our vicinity recently, when cattle, due to a storm, were driven to a lot where hay was kept. The milk cows ate the hay and in a short time several members of the family who drank the milk developed milk sickness. Upon investigation, white snake root was found in the hay.

This report is based upon the handling of something over a hundred cases. From these cases, it is apparent that the disease is transmitted to man from eating meat or butter, or from drinking milk from cows that are affected with trembles. More cases are encountered during August and September of dry years and may extend on through October and into November.

It has been noted that cows giving milk may eat the plant without any bad results but any animal or person drinking the milk or eating the flesh of affected cows will become ill and often die. This makes it dangerous to people because it is not always possible for the inexperienced to guard against the disease. However, those who are accustomed to it, are able to detect greenish looking globules on top of the milk of affected cows.

The symptoms of the disease in man can best be described by the report of two typical cases treated by us:

Case No. 5474.—A well-nourished male, age twenty-three. Admitted to Grace Hospital on September 13, 1932. Past history was negative except for the usual diseases of childhood and appendectomy three years previously from which he entirely recovered. For three months before admission to hospital, had suffered at times from loss of appetite, languor, fatigue, nausea and vomiting. Much of the time he had been unable to take food or water because of nausea which was followed by vomiting. Had sick headache and pain in epigastrium at frequent intervals over this period. After doing a hard day's work he was forced to bed. After being confined to bed vomiting was almost continuous and patient was very dull mentally. It had been almost impossible to get bowels to move for four days previous to admission, in spite of the use of various enemas and purgatives. On admission, patient was complaining of pain in the abdomen and, at times, in the calves of the legs, followed by stiffness. There was extreme thirst and a fetid odor was detected about the breath. Patient was in a semi-comatose stage from which he could barely be aroused. There were occasional convulsive seizures during which he was particularly hard to handle.

Physical examination revealed the following: a few moist rales in upper lobe of each lung and pleuritic friction rub fourth interspace, mid-clavicular line, left side. Abdomen was tympanitic over the area of the colon. Patella reflexes were absent and pupillary reflexes sluggish. The skin was cold and clammy and there was an odor of acetone or an odor that resembled chloroform about this patient. Temperature was 98.4, pulse rate 88, and respiration 24. Red blood cell count 3,750,000; white blood cell count 9,160. There was a trace of albumin and one plus sugar in the urine.

Patient was put to bed, given normal saline, 1000 c.c., and glucose, 50 c.c., by hypodermoclysis; sodium chloride, three and one-half teaspoonsful, and sodium bicarbonate, three and one-half teaspoonsful, in a pint of water per rectum every three hours, and whisky to the point of intoxication. Hypodermoclysis of saline and glucose was repeated on the second day. On the third day patient began improving and was able to retain liquid diet with soft boiled egg. On the sixth day he was discharged from the hospital very much improved.

Another typical case was Mr. W. B. C., Case No. 5478. A fairly well-nourished male, age fifty. Past history was negative except for the usual childhood diseases and a severe case of typhoid fever several years ago, from which he recovered with no complications. He had recently moved into this community from Knoxville, Tenn. One week before coming to hospital he had noticed loss of appetite and nausea. Upon getting hot while at work he became very weak, vomited and had an attack of "trembles." This was followed by vomiting greenish fluid at frequent intervals. After this began he was very constipated, weak and unable to walk. There was no headache, backache or other pain. His condition grew worse each day for six days and, at the time of admission, patient was vomiting or gagging constantly and could not be aroused from coma. Preceding this coma, which began four hours before admission to the hospital, he complained of considerable pain in abdomen and, at times, in the calves of the legs. He had had

various attacks, probably one each day, of "trembles" at which time he would become cyanotic, weak, skin cold and clammy, breath short and, upon one occasion, he had a convulsive seizure, became unconscious for two hours and then regained consciousness. At the time of admission he could not be aroused from coma enough to talk intelligently.

Physical examination revealed temperature 98, pulse rate 100, respiratory rate 32, blood pressure 100/50. Lungs were negative except for dullness in the upper lobe of right and a few harsh rales in the same area. Heart was enlarged downward and to the left with slight blowing systolic murmur at the apex that was transmitted to the lower angle of the left axilla and left scapula; heart action was throbbing. Epigastrium was tender and slightly rigid; the skin was cold and clammy and covered with cold perspiration. There was an odor of acetone about this patient. Patellar reflexes were absent; pupillary reflexes were very sluggish.

The patient was given stomach lavage immediately. Sodium chloride, three and one-half teaspoonsful, and sodium bicarbonate, three and one-half teaspoonsful, in a pint of water were given per rectum every three hours. Normal saline, 1000 c.c., and glucose, 50 c.c., were given by hypodermoclysis. No alcohol was given. Patient expired on the day following admission.

In the last case the farmer had recently moved into a new country and had begun to clear land in the forest which is a very suitable place for white snake root to grow. There were numerous cases of milk sickness in this particular country. In the treatment of the last case, alcohol was not prescribed, as I was of the opinion at that time that patients recovered as well with duodenal drainage, gastric lavage and filling the body with saline, glucose and fluids. However, upon consideration of the whole series of cases, I find that at least twice as many recovered with the use of alcohol added to the above treatment as without it. It has long been a custom with the mountain people to treat the disease with a large amount of brandy and honey and it has also been noted by various writers, Dr. Arthur J. Clay and others, that the active principle, trematol, has special affinity for alcohol and it is correctly used as an antidote when used to the degree of intoxication. This chemical affinity is explained in the following manner by Mr. J. B. Pritchett, B. S., Technician of Grace Hospital:

"Trematol is found in the white snake root weed in combination with a resinous acid. Trematol is a straw yellow aromatic oil, soluble in organic solvents but insoluble in acids, alkalies or water. The formula is $C_{16}H_{22}O_3$. Structurally, this compound has a phenyl group with a side chain that has two double bonds; trematol does not have either a carboxyl or aldehyde group. A ketone group in this compound has not been definitely proven absent.

"It is logical to assume the possibility of a tautomerism in trematol that is similar to that which exists in acetoacetic ester and malonic ester. If this actually exists, the presence of a hydroxyl or alcohol group, close to a negative, double bond or oxygen group in one of the tautometers, is established. This being the case, an acid could combine with the trematol, which has been shown by Couch. Therefore, the possibility of a compound being formed with the ethyl alcohol with the splitting out of water is noticed, provided the conditions are favorable.

"In the body, one molecule of glucose is required to be burned before two molecules of a fatty acid can be completely oxidized to carbon dioxide and water. If the availability of glucose is interfered with, the fatty acids are only oxidized to the ketonic acids and an acidosis occurs. This is the condition in a diabetic coma and in milk sickness. When large amounts of alcohol, in some form, and glucose are given to patients with trembles, they usually recover. After recovery, if patients become overheated, there may be recurrence of the disease.

"My hypothesis as to the chemistry involved in the disease and the above treatment is as follows: 1. The poison counteracts the ability of the organism to change the glycogen stored in the liver to glucose or neutralizes insulin, more probably the former. 2. When glucose is given intravenously, this over-comes the shortage of available glucose or over-comes the hypoglycemia and hyperlipemia, thereby, helping to overcome, temporarily, the effect of trematol. 3. The administration of alcohol causes an ester of trematol to be formed which is less toxic. 4. If the patient becomes over-heated before the ester is excreted, a hydrolysis of the ester occurs, liberating the active poison."

SUMMARY

Milk sickness is a rather rare disease in most countries and seems to clear up as the land grows

older, as the eupatorium ageratoids is found only in shady places near streams. We have seen this disease for the past sixteen years and during this time we have treated over a hundred cases. Due to the fact that alcohol seems to have an affinity for the substance causing the disease, there seems to be nothing better, after all, as antidote, than alcohol pushed to the point of intoxication. I also find that gastric lavage, duodenal drainage, hypodermoclysis of normal saline and glucose work extremely well. I must say that a majority of cases treated without alcohol in some form or other usually die. The old custom of the mountaineers treating it with brandy and honey cannot be dismissed too lightly, for the honey serves the same purpose of the glucose and we have found no difference in the effect of brandy and any other type of alcohol.

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CLINIC OBSTETRICS: A REVIEW OF FIFTY-TWO CONSECUTIVE CASES.*

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The purpose of this paper is to analyze for the Society a group of fifty-two consecutive obstetrical cases, pointing out the complications encountered, the methods used in handling them, and to some degree the results obtained over a period of six months of free, or clinic cases, delivered at the Protestant Hospital of our city. The six months under consideration are of the past year, 1933, from April 1st until October 1st, inclusive, during which time it was my opportunity to do the work for the chiefs and from whom I have permission to use the data of the cases we delivered during their respective services. The work, therefore, represents a half-year's clinic obstetrics under my supervision and any adverse criticism provoked as to methods, or results, falls to me and not the Chiefs of the Service.

During that period, which I feel gives a fair cross-section of the type of patients encountered in the usual run of free bed patients, we delivered on the service a total of fifty-two patients. Since this is to be a statistical report I shall try to stress only the more important headings, augmenting those headings with group and composite tabulations.

The patients delivered in this group, with a few exceptions as shall be pointed out, had been treated and followed in our prenatal clinic. The more serious accidents and complications which occurred were in patients whom we had not treated pre-natally, and who came in the hospital at the time of labor, or near labor, to be treated and delivered. Pre-natal care, therefore, shall be dismissed from this paper with this thought—that the importance of pre-natal care is universally self-manifest, and is borne out in our small group report indelibly by citing several serious complications in patients who came under our care, during the six months, who had not received pre-natal study.

The majority of the deliveries, both spontaneous and forceps, were performed under my supervision by the interne on service.

The Methods of Delivery.—In clinic obstetrics one bears in mind the importance of teaching the interne staff the various types of deliveries. In our group we attempted to follow a program similar to this: All patients received adequate obstetrical analgesia during the first stage of labor to produce effective results. The type of analgesia varied with the individual patient, and, regardless of the kind used, it was given sufficiently to produce effect. There is no need to enumerate the many analgesias available, the important fact being the effect ob-

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tained. All of these patients received an inhalation anesthesia intermittently as the first stage came to an end. In those cases which permitted of obstetrical anesthesia during the second stage of labor, it was unhesitatingly administered. As it will be noted from the tabulated results of our deliveries we delivered more than one-half of them by forceps. Of our fifty-two deliveries we allowed eighteen patients, or 34.6 per cent, to be delivered spontaneously. All of these patients delivered rapidly and promptly without a long second stage of labor. Of these spontaneous deliveries, there were five primiparae and thirteen multiparae. Our forceps incidence is relatively high, but it in no way indicates a high percentage of complications in the ordinary sense of the word in which forceps are needed. In the majority of our forceps deliveries, the forceps were used to terminate the second stage of labor after the head was on the perineum and the scalp visible, and in those cases where the patient could be readily helped. In other words, the deliveries were normal forceps deliveries, termed by some men as a prophylactic forceps.

The majority of the forceps deliveries were of the low forceps type, there being sixteen in primiparae and six in multiparae, with a total of twenty-two low forceps deliveries. Our spontaneous deliveries were almost as many, eighteen in number, and had it not been for the fact that the internes must learn both spontaneous and forceps deliveries, there would probably have been a higher low forceps incidence.

There were six mid-forceps applications and of this group most of them were performed in order to rotate a persistent occiput posterior position. Five mid-forceps were in primiparae, and one in multiparae. The one high forceps done was an imperative indication, as shall be explained later. The total number of forceps deliveries done was twenty-nine, giving a percentage of 55.7 forceps deliveries. Such a percentage of forceps deliveries on the surface appears rather high, but careful analysis produces less alarming reactions. Being greatly in favor of the more modern view regarding forceps, I feel that forceps termination of labor at the proper time, and skilfully done, relieves the patient of hours of pain and exhaustion, as well as alleviating much of the disastrous consequences of prolonged pressure on the presenting head.

Our operative incidence as a whole was 65.3 per cent, or on thirty-four of the fifty-two patients some operative obstetrical procedure was done; twenty-nine of those patients were forceps deliveries, three were caesarean sections, one was an internal podalic version, and the other was a breech extraction as a termination for transverse lie.

Thus we summarize fifty-two deliveries, of which eighteen were spontaneous, or 34.6 per cent; thirty-four were operatively delivered, or 65.3 per cent; and of the operative deliveries, there were twenty-nine forceps, or 55.7 per cent.

Next we shall consider the common complication of occiput posterior position and its incidence in our series of fifty-two cases. We had fourteen, or 26.9 per cent, occiput posterior positions in our group, seven of which were R. O. P. and seven were L. O. P. Of these fourteen positions, two were found at the time of caesarean section. Four of the posteriors rotated during labor and were delivered from the anterior position by low forceps. One posterior was rotated manually and the patient, a multipara, delivered spontaneously. One patient, a multipara, delivered spontaneously and rapidly as a posterior.

There were five Scanzoni maneuvers done, all of which were mid-forceps applications, except one, which was a low forceps delivery. Of the entire fourteen posteriors only one was delivered by internal podalic version, and that was done because it was the easiest method of approach. This patient was a para IV, having been in labor for twenty-seven hours, was showing signs of exhaustion; the head was high, membranes intact and the cervix completely dilated. In other words, there was a perfect setting for a version, which in this case was expediently done without difficulty.

Our eclamptic and pre-eclamptic toxemias were seven in number, there being five pre-eclamptics and two eclamptics. All of the pre-eclamptics, with one exception, had been pre-natal clinic patients. The two eclamptics were not our pre-natal cases and were sent into the hospital at the time of eclamptic symptoms. The pre-eclamptic patients, all of which were very near term, were treated very effectively with magnesium sulphate and concentrated glucose intravenously, regulation of the diet, sedation with bromides, and adequate elimination. None of the pre-eclamptics required morphine or chloral hydrate sedation because the magnesium sulphate and glu-

cose, rest, and dietary regime controlled the edema, headaches, and hypertension sufficiently. Three of the five pre-eclamptics had labor induced surgically by the introduction of a large size Voorhees' bag after the toxemia had sufficiently responded to treatment.

Our two eclamptic patients, as before mentioned, had received no pre-natal care. One of them, a white primipara sixteen years of age, was delivered in North Carolina by a Navy doctor and then brought to the hospital by aeroplane for recovery. She had two convulsions after arrival at the hospital, but immediate treatment was instituted and she promptly recovered and went home on the ninth day. The second eclamptic proved to be a much more serious and near disastrous case. The patient was a colored primipara, age eighteen, who was brought into the hospital by the police and was having convulsions on admission. Her blood pressure was 172/120, she was quite edematous, irrational, restless, and practically incoherent and uncontrollable at the time of admission. Prompt intravenous administration of 60 c.c. of 50 per cent magnesium sulphate and concentrated glucose 200-300 c.c., with hypodermic injection of morphine, seemed to quiet the patient considerably. It was impossible to determine from her how long she had been in that condition on account of her deranged mentality, but it was certain from examination that she was in quite active labor. Delivery was effected about nine hours after admission to the hospital, which was as soon as the cervix was fully dilated. A further complication was an R. O. P. position, which was overcome by a Scanzoni maneuver in mid-pelvis and a live baby was delivered. The median episiotomy, which had been done, continued to tear and a third degree laceration resulted, but repair was satisfactory and the wound healed by primary union. The post-delivery convalescence was very stormy and active treatment had to be continued. Convulsions continued for two days at increasing intervals. It was the fourth or fifth day before the edema began to subside, and the seventh day before the patient became rational and coherent enough to respond normally to questions and surroundings. She recalled nothing of being brought to the hospital, and until the seventh day post-delivery her mind failed to register the happenings. She was discharged from the hospital on the fifteenth day, after having run a febrile temperature. Her urine presented all the findings of a severe kidney damage.

The caesarean sections done were three in number, or 5.7 per cent of the deliveries required an abdominal delivery. All of the caesareans were classical sections.

The first one was a colored multipara with a contracted pelvis who had formerly had a caesarean section. The second one was a colored primipara with a contracted pelvis, and on whom we had expected to do a caesarean. She came to the hospital in labor with the fetal head floating after more than six hours of hard labor. The cervix was about two fingers' breadth dilated, but the history of rupture of the membranes could not be gotten. Had it been known that the membranes were ruptured, as we found at operation, we would have done a low cervical section. However, the results were very satisfactory, and she recovered after an uneventful convalescence.

The third caesarean section was done for a central placenta previa at seven months' gestation. This woman was a multipara, para X, so that at operation a Pomeroy sterilization was done. Of these three classical caesareans, the second one, which had ruptured membranes undetermined in her history, should have had a low cervical section as we look back on it in retrospect.

So far I have discussed chiefly the methods we used in dealing with our cases. The results are of no small interest to us, and, after all, that is the proof of the methods.

Our morbidity and mortality rates are of most immediate interest as far as hospital records and statistics go, but the so-called minor results, notably the lacerations and damage to the birth canal are very important to the patient. Unfortunately, on account of the failure of patients to return to post-natal clinic for follow-up examinations, we cannot give the results at six weeks postpartum.

However, the lacerations incurred at delivery can be noted. There were a total of twelve first degree lacerations, seven in primiparae and five in multiparae. There were six second degree lacerations in primiparae and none in multiparae. There was one third degree laceration, and it occurred in the primiparous eclamptic before mentioned. All of the lacerations were immediately repaired and all healed

by primary union. There were eight median episiotomies done and all were in primiparae. Those episiotomies which tore beyond the episiotomy wound were classified in the appropriate section for lacerations.

In estimating our morbidity rate we used the hospital standard, which, in order to renew our memories, is any temperature which reaches 100-2/5 twice within any forty-eight hours after the first twenty-four hours postpartum. Such temperatures indicate a febrile puerperium and a diagnosis of the causative factor must be determined.

Of our fifty-two cases there were five patients who ran febrile temperatures, exclusive of the three caesarean sections—all of whom would be considered febrile if their temperatures had complicated a vaginal delivery. Our five febrile patients gave a percentage of 9.6 morbidity.

The causes for the febrile conditions were as follows: Patient No. 1—Pyelitis. Patient No. 2—Sapremia, eclampsia and nephritis. Patient No. 3—Pyelitis, sapremia, coryza and gastro-enteritis. Patient No. 4—Cystitis. Patient No. 5—Sapremia and coryza. All of these patients responded quickly and satisfactorily to treatment and left the hospital with only a few extra days added to their stay. All three of the caesarean sections ran elevated temperatures due to post-operative reaction. Two of them had added causes for fever—that of breast engorgement and retained lochia in one, and sapremia and pyelitis in the other. If these three cases should be added to the morbidity list, it would increase the total to eight febrile patients or a percentage of fifteen. Such a result compares favorably with previous records in the hospital.

My last consideration in this paper is the mortality rate. Of our fifty-two mothers delivered, we had one maternal death and two fetal deaths. The maternal death and one fetal death occurred at the same delivery. This patient, one who had not received pre-natal care in our out-patient clinic, came into the hospital on the ambulance after having been seen on the outside by one of the Public Health Hospital internes. The patient was a multipara, para IX, practically at full term, who had developed a sudden sharp abdominal pain followed by slight vaginal bleeding two hours before admission to the hospital. On admission she was seen by the interne and myself and a diagnosis of premature separation of the placenta was made. Fetal heart sounds and fetal movements were not present, but in view of the fact that the cervix was about one-fourth inch thick and only two fingers dilated, and the patient's blood pressure was 130/80, I informed the family that a caesarean section was being considered. The Chief of the Service arrived soon after he had been sent for and it was decided that delivery could be effected vaginally. The patient, still in excellent condition, was prepared for delivery and anesthetized; the Chief manually dilated the cervix, applied high forceps and delivered, as we had expected, a dead fetus. The placenta was expressed by Crede's method and a large retro-placental clot was found, confirming our diagnosis. The uterus contracted promptly and well. There was a bilateral cervical laceration about two inches long into both broad ligaments, which I repaired immediately, packed the uterus and vagina, and started 1,000 c.c. saline and glucose intravenously. The patient's general condition was excellent after the delivery, so much so that both the Chief and I left the hospital.

The patient died rather suddenly an hour or so after that, at which time she had bled through the uterine and vaginal packing and saturated the delivery bed. The uterus was soft and boggy and would not respond to pituitrin, nor to massage. Adrenalin, coramine and digalen administered hypodermically had no effect. It is my belief that the patient had a secondary uterine relaxation, which was provoked by the infiltration of blood into the muscular wall of the uterus, caused during the period of premature separation of the placenta, and that the muscle tone was too fatigued to react to stimuli, thereby permitting the open ends of the uterine sinuses to bleed into the uterus and through the packing. That, coming as a sequence to having already lost considerable blood from the detached placenta, the patient died of hemorrhage. Obviously, the infant died of intrauterine suffocation.

The second baby that we lost was the one delivered at caesarean section for placenta previa. The baby was seven months' gestation, lived three hours after birth, and died of prematurity.

All of our babies, fortunately, except for the two who died, and another that I shall mention, passed through the newborn stage without any serious complications.

One baby, a female, developed hemorrhagica neonatorum, passed blood by stool and in the vomitus for several days, and required three small intraperitoneal transfusions of its parents' blood before the tendency to bleeding subsided. Routine Wassermanns on the baby's and mother's blood were both positive, and antiluetic treatment results established the fact that the bleeding was of syphilitic origin.

fords us an unbiased report, based on facts, whereby we may determine at what point in our improvement of medical sciences we are falling short, and also affords the encouragement of progress, if any. The relatively high forceps incidence cited in this series of cases in no way indicates a large group of obstetrical complications, but, fortunately for the patients delivered, means that hours of pain, labor

Total Obstetrical Deliveries April 1 to October, 1933		Total	Prim.	Episiotomy	Lacerations 1°	Lacerations 2°	Lacerations 3°	Mult.	Episiotomy	Lacerations 1°	Lacerations 2°	Lacerations 3°	Mat. Mort.	Foetal Deaths S. B.	Foetal Deaths Died
Total Labors	Vertex	50	26	8	7	6	1	24	0	5	0	0	1	1	1
	Breech	1	0	.....	....	....	....	1	.....	1	....	....	.....	....	....
Vertex Presentations	L. O. A.	20	11	.....	4	2	....	9	.....	3	....	....	.....	....	....
	R. O. A.	16	8	.....	1	1	....	8	.....	1	....	....	1	1	....
Transverse Lie 1	R. O. P.	7	3	.....	....	2	1	4	.....	....	....	....	.....	....	....
	L. O. P.	7	5	.....	2	1	....	2	.....	....	....	....	.....	....	....
Breech Extraction		.....	.....	.....	....	....	....	1	.....	1	....	....	.....	....	....
Forceps 29	Low	22	16	5	4	4	....	6	.....	1	....	....	.....	....	....
	Mid	6	5	3	1	2	1	1	.....	....	....	....	.....	....	....
	High	1	0	.....	....	....	....	1	.....	....	....	....	1	1	....
Version and Extraction 1		.....	.....	.....	....	....	....	1	.....	....	....	....	.....	....	....
Caesarean Section	Low	0	.....	.....	....	....	....	.....	.....	....	....	....	.....	....	....
	Class.	3	1	.....	....	....	....	2	.....	....	....	....	.....	....	1
Total Obst. Operative Incidence		65.3%		Forceps Incidence 55.7%				Version 1.9%					Caesarean Section 5.7%		
Toxemia	Pre-Eclamptic 5 Eclamptic 2	Obst. Morbidity 9.6% (5 patients)													
Total Number New Babies			Single 52				Twins 0	Living 50				Stillbirths 1			
Deaths Babies		1	Infant Mortality 3.8%												
Deaths Mothers		1	Maternal Mortality 1.9%												

My closing remarks will be brief. There are several more interesting phases of this study which could be brought out and elaborated upon, but it is obvious that detail to any extent in a paper of this nature is precluded by lack of time.

Therefore, I shall close by emphasizing a few points which I feel may be of importance to us all. A composite and statistical study of this nature afexhaustion and birth pressure were lifted from the most critical and crucial time of a woman's life. Long, hard labors should be a thing of the past.

Finally, the unfortunate accidents and emergencies, which increased our morbidity and mortality, occurred chiefly in the pre-natally neglected patients. Obviously, pre-natal care speaks for itself.

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ACCIDENTAL PNEUMO-CRANIUM.

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Washington, D. C.

The rarity of this condition and the unusual interest, which many of my colleagues manifested in viewing the films, have prompted me to make a report of this case. I have been unable to find any reference in the current literature of a similar case, and, for the want of a better term, I have called it "Accidental Pneumo-Cranium." The term is of my own coinage, and I feel that it adequately expresses the meaning which I wish to convey.

The history of the case is briefly stated, as follows: The patient, a white female, is now in the sixth decade of life, and, except for an occasional indisposition, has enjoyed a long healthful span. The record of the following accident as told by the patient was transmitted to her by her parents, as she was too young to recall the incident. The patient was born in Manchester, England, and sometime during the second or third year of life, while toddling about the family fireplace, fell and struck her head on an iron prong, which pierced the inner quadrant of the superior margin of the right orbital cavity. The little patient was treated at the Manchester Infirmary, and after a brief period of convalescence was discharged. The patient bears a vertical scar, and a bone defect, measuring one centimeter in length on the superior margin of the right orbital cavity, one and one-quarter cm. lateral to the naso-frontal suture.

From that time on, the history is negative as regards the development of any symptoms referable to this accident. The patient has never been subjected to headaches, sinus trouble or colds. About twenty years ago the vision of the right eye became slightly impaired, and about three years ago the vision in the left eye became impaired.

Recent ophthalmological examination disclosed nothing out of the ordinary, only such symptoms as usually accompany advancing years. The neurological examination is negative as regards motor or sensory disturbances. The roentgenological examination consisted of exposures made in the lateral stereoscopic and the twenty-three degree angle, Granger positions. The lateral stereoscopic films show an old fracture of the inner table of the skull on the right, with irregular thickening of the inner cortex into a small crater-like formation. The depressed center of the crater is located 2.5 cm. above the superior margin of the right orbit. Extending outward and upward from anterior portion of the base of the skull is a fan shaped area of decreased radiodensity, extending from the inner margin of the right orbit to the tegmen mastoid on the right.



Fig. 1.—(Lateral view). Note crater-like depression posterior to frontal sinus, also large fan-shaped air sac.

This area of decreased radiodensity is closely applied to the inner aspect of the frontal, parietal and squamous portion of the temporal bones, and extends from the base to the mid-point between the vertex and the base. Posterior to the tegmen mastoid, this area of decreased radiodensity becomes irregular in distribution, reaches into the superior portion of the posterior cerebral fossa above the torcular herophili, where it forms a large circular area.

The twenty-three degree angle, Granger position, shows lack of development of the medial portion of

the right frontal sinus. The lateral portion of the right frontal sinus consists of a dilated tubular communication between the right nasal cavity and the area of decreased radiodensity, above described. The coronal suture (sutura limbosa), despite the advanced years of the subject, has failed to unite by bony union, and the normal serrated and bevelled edges of the frontal and parietal bones have disappeared. The sagittal and lambdoidal sutures are completely ossified.



Fig. 2.—(P. A. view). Note undeveloped frontal sinus on right, also tubular communication between right nasal cavity and the air sac.

INTERPRETATION

From the history of injury early in life, before development of the frontal air sinuses, and from the radiographic findings, this patient has an extensive air-sac between the external layer of the dura mater and the inner aspect of the skull bones, reaching anteriorly from the inner margin of the right orbit to the occipital fossa posteriorly, in direct communication with the right nasal cavity. The accidental puncturing of the inner table of the skull in the position of the undeveloped frontal sinus has permitted air to enter the cranial cavity between the inner aspect of the skull bones and the outer surface of the external layer of the dura mater, which serves as an internal periostium for the skull bones. This air sac, having been formed during the early years, has dissected away the dura mater from the skull bones until it reaches the posterior cerebral fossa. This extensive air-sac is in free and constant communication with the outside through the undeveloped right frontal sinus and right nasal cavity. The failure of ossification of the coronal suture and its replacement by fibrous union has permitted a slight expansion of the cranial cavity to compensate for the increase in the intercranial contents due to the presence of the contained air.

I wish to express my appreciation of the kindness of Dr. T. A. Poole, of this city, for his able assistance and cooperation in the presentation of this case.

Diagnosis: Accidental Pneumo-Cranium.

Farragut Medical Building.

THE SKIN ERUPTION WITH CODEINE—A CASE REPORT.

MALCOLM H. HARRIS, M. D.,
West Point, Va.

The general practitioner frequently sees skin eruptions accompanying drug therapy, but it is seldom that they are so proven. This case, occurring in the midst of an epidemic of measles and an endemic of scarlet fever, caused more than the usual concern, and, due to several propitious circumstances, enabled a more thorough investigation.

Codeine is one the most frequently administered and one of the most dependable drugs in the hands of the physician. It is used most frequently in cough mixtures as a sedative, and, independently or in conjunction with other drugs, as an analgesic. These features add to the interest in this case of skin rash, besides adding to a general knowledge

of the possible complications accompanying the use of the drug.

The recent report of a case by Scheer and Keil[1] has added further interest to our case, for they state that their case is the seventh actually proven case reported to date. They give a study of the previous cases reported, and for history and literature their article contains various references in literature.

CASE REPORTS

A white American, artesian well-digger, age 30, came to my office on March 12, 1934, at 7 P. M. He stated he had been doing unusually heavy work during the past few days. He had taken cold, and was having shortness of breath, spitting a little blood. and was feeling generally ill.

Examination: Well developed man, flushed face, watery eyes, uneasy and anxious look, labored breathing, and general appearance of being ill.

Head: Throat red, tonsils mildly inflamed.

Chest: Well developed.

Heart—Rapid, intermittent, slight mitral systolic murmur. Precordial area large.

Lungs—Bronchial rales. Moist rales in left subscapula area.

Blood pressure: 110-68. Pulse 88.

Further examination was unimportant.

On the basis of these findings, patient was instructed to go home and keep quiet, eat lightly, and report again in two days. He was given a prescription for codeine sulphate, six tablets, a grain each, to take one every four hours. A prescription was given for tincture of digitalis, twenty drops every four hours.

March 13: His wife came to office and reported he was feeling better. She was told that he should be kept quiet, etc.

March 14: He returned to office, and stated he was feeling better. Asked me to look at a rash which had appeared on his chest during the previous twenty-four hours. The rash at this time was a typical scarlatiniform type. He complained of some itching. Unfortunately I had a case of scarlet fever next door to his abode, which aroused my concern. He denied having been near the fever case. His temperature was 98. The rash was distributed over his chest and abdomen, none being visible beyond his clothing. He casually remarked he believed it was due to the white pills. He was directed to go home and stay to himself, awaiting developments. Other than the rash, there were no symptoms; his other disabilities were improved. I did not give him more codeine pills.

March 15: I called to see him and found him in bed. The rash had almost faded out. The dose of digitalis was continued.

March 17: Rash entirely disappeared, without desquamation. I felt sure at this time that the codeine had caused the rash and so advised the patient, suggesting he should mention this to any subsequent physicians and save himself the discomfort.

March 23rd: Continued improvement.

March 26th: Tested patient for local skin reaction, which was conclusively positive. The test used is described below.

COMMENT

It appears that the patient had an acute illness. He was given codeine to alleviate his cough and pains. The rash was concurrent with the drug therapy, and not accompanied by fever. The rash appeared within the first twenty-four hours and there was some itching. He had only six grains, one grain being taken the first night and the others the next day. The signs were entirely gone at the end of two days, and, as the digitalis was continued, it could be exonerated of blame.

On March 25th, a report of codeine reactions appeared, which aroused my further interest.

The patient assented to a simple skin test on March 26th, and it was suggestive of the codeine as the cause. The test was performed by cleaning the flexor surface of the forearm with alcohol, and drying with clean cotton. Two small areas the size of a pea were excoriated carefully without bleeding. A pledget of cotton dipped in a solution of codeine (one grain to the ounce of distilled water) was placed on one of the excoriated areas and another pledget dipped in distilled water on the other. In ten minutes, a definite wheal with pseudopod formation and configurations had developed under the codeine sponge on the upper scarification, while the lower one had no manifestations at all.

To my mind, the sensitiveness of the skin would have established the case of codeine rash, but, as Dr. Scheer[2] suggests, there is but one way to definitely establish the cause clinically. Unfortunately,

[1]Scheer, Max, and Keil, Harry: The Skin Eruptions of Codeine, *J. A. M. A.*, v. 102, p. 908-9, March 24, 1934.

[2]Personal Communication, Dr. Max Scheer, April 2, 1934.

the patient moved away, so he was never persuaded to take more codeine and prove his case!

This report may throw light on some cases of rash and help solve a very disturbing problem for some one else. I have no doubt it occurs with much greater frequency than has been reported.

PURULENT PERICARDITIS—CASE REPORT.*

HAL DAVIS, M. D.,
Roanoke, Va.

Any disease that is recognized at the autopsy table many times more frequently than it is clinically should center our interests toward improved methods of diagnosis. The present status of purulent pericarditis places it in this unfortunate category, and, although this report can offer no new methods of diagnosis, the case I wish to report holds a peculiar interest in view of the fact that the course the malady followed is very unusual, and I have been unable to find a similar one to it in the literature.

The patient was a white female child, one of twins, nine years old, taken sick December 10, 1933, with what the parents described as a moderately severe attack of influenza. Her past history revealed that she had been a normal healthy child. She had had all of the usual diseases of childhood, and her last sickness was scarlet fever in June, 1933, from which she completely recovered and remained in excellent health until the present illness. The family history was negative except for one older sister who had rheumatic heart disease and chorea.

The patient recovered from the influenza sufficiently to return to school at the end of one week, but the mother noticed she remained listless, tired easily, and seemed to "run a fever every afternoon." In a few days she began to complain of a dull, aching, non-radiating pain, in the left hypochondriac region, and was removed from school once again. These symptoms gradually grew worse, and on December 30th a physician was summoned for the first time. He diagnosed the condition as pleurisy and treated her for this, but no improvement resulted. On January 15, 1934, she was taken to a clinic for a thorough examination. Records show her laboratory work at this time as follows: Hemoglobin 53 per cent, R. B. C. 3,970,000, W. B. C. 16,350, polymorphonuclear leukocytes 76, lymphocytes 16, large mononuclear leukocytes 6, lymphoblasts 1, transitionals 1. Urinalysis negative. The temperature ranged during her stay from normal to 102.6 degrees, pulse from 92 to 128, and respiration from 20 to 35. Unfortunately the family became dissatisfied with the treatment and took the child home before any definite diagnosis could be made. The patient continued ill however, and I saw her for the first time on January 29th.

Examination revealed a well developed, somewhat emaciated, white female child, lying quietly in bed, suffering no pain, but presenting the most constant and outstanding symptom of her disease, dyspnea. The pain in the left hypochondrium had ceased a few days before. Inspection of the chest showed a definite bulging of the lower thorax, most noticeable on the left. There was a marked increase in the area of cardiac dullness, the right border being 2 cm. from the sternal margin, with obliteration of the cardio-hepatic angle, and the left border of dullness about 2 cm. beyond its normal limit. The line of dullness fell in the axilla to the level of the sixth rib, and rose again in the subscapular area to the sixth rib. It might be mentioned here that this is an important point in the differential diagnosis, for in a pleural effusion the line of dullness nearly always rises in the axilla. The apex impulse could be felt as a diffuse thrust, but no definite point could be localized as the apex. Auscultation revealed a to and fro pericardial friction rub at the base of the heart, with a pleuro-pericardial rub at the lower left border. There were no murmurs, but the intensity of the heart sounds was slightly diminished. The lungs were negative except for moist rales in both bases, with bronchovesicular breathing in the left subscapular area, but no special diminution in the intensity of the breath sounds. A mass, which was apparently the liver, could be felt extending about 4 cm. below the xiphoid process and about 2 cm. below the right costal margin. X-ray and

*Read before the Roanoke Academy of Medicine, May 7, 1934.

fluoroscopical examination confirmed these physical findings. The temperature at this time was ranging from 99 to 103 degrees, pulse from 120 to 140, and respiration from 22 to 38. The rest of the examination was essentially negative.

The diagnosis of purulent pericarditis was relatively certain at this stage, but treatment presented several problems. In view of the very limited finances of the family, and a mortality of approximately 50 per cent from operation in these cases, it was decided to watch the progress of the disease for a time, so the patient was digitalized, put at rest in bed, and given paregoric for the occasional "smothering spells" of which she complained. A slight improvement followed, but the pulse never fell below 120, and the enlarged liver, which was probably similar in origin to the pseudo-cirrhosis of Pick's syndrome, continued to increase in size. The friction rubs disappeared but there was no noticeable change in the area of cardiac dullness.

Two weeks later, on February 13th, the patient began to grow definitely worse, the temperature and pulse rose, more edema appeared in the lungs, and the respiration became more labored. Two days later, a small, tender, fluctuating, nodule appeared one inch below the xiphoid process, just to the left of the mid-line. This was opened the next day, but only a few drops of pus was obtained. With the patient now apparently approaching the end, it was decided to aspirate the pericardium as a palliative measure. This was done, going in by the xiphoid process, and two ounces of thick yellow pus was removed. The organism was a staphylococcus. Next day the patient was a little more comfortable, but it was on the following day that nature came to the rescue. Large quantities of pus began to pour from this small abscess below the xiphoid process, and almost immediately she began to improve. Later, on examination with a probe, a sinus was found to have been established, going straight backwards, upwards, and to the left, from the abscess to the pericardium. A profuse drainage continued for a little over three weeks while a steady improvement followed, and by April 12, 1934, the heart, lungs, and liver had apparently returned to normal. X-ray and fluoroscopic examination on April 18th was also negative for any pathology, and now the child is in excellent health, normal in weight and size, and so far no signs of adhesive pericarditis have appeared.

In presenting this case, I do not wish to advocate any such conservative treatment in purulent pericarditis, for pericardotomy still offers practically the only hope for recovery after frank pus has once developed. However, I think nature has perhaps given us a lead in this case whereby the high mortality from operation might be reduced. If, instead of resecting the fourth, fifth, or sixth rib, as is usually done, the xiphoid process were removed, and the pus evacuated by establishing drainage along the floor of the diaphragm, the drainage would probably be more natural and complete, and the results more encouraging.



Left. X-ray taken January 26th. Typical pericardial effusion.



Right. X-ray taken April 18th. Normal chest.

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H. C. HENRY, M. D.,
Petersburg, Va.

Sunday afternoon, October 21st, at Petersburg, the friends of Dr. William Francis Drewry, gathered to pay final tribute as his body was interred in historic Blandford Cemetery. His death occurred October 19, 1934, at his home in Richmond. The son of James David and Martha Francis Drewry, he was born in Southampton County Virginia, March 10, 1860. He was educated at Murfreesboro Academy, at Randolph Macon College, and at the Medical College of Virginia, from which last institution he took his degree in medicine in 1884. Very early in his professional career he became interested in nervous and mental diseases, and he appears to have seen in the rather neglected specialty of psychiatry a field for great development. On September 1, 1886 he received an appointment as second assistant physician to the late Dr. Randolph Barksdale, then superintendent of "The Central Lunatic Asylum." On April 15, 1887, he was promoted to the position of first assistant physician, which he held until November 1, 1896, when he was elected superintendent to succeed Dr. Barksdale, who had resigned on account of ill health. Long before this time, however, many of the duties and responsibilities of the superintendent had rested upon him during Dr. Barksdale's illness. Dr. Drewry continued as superintendent of the Central State Hospital until January 7, 1924, when his reputation as a business executive was responsible for his election by the City Council of Petersburg to the position of City Manager. I believe that Dr. Drewry was never particularly happy in this position, and that his heart yearned for a return to the kind of work which had for so many years occupied most of his waking and many of his sleeping hours. So it must have been with great relief that upon the expiration of the term for which he was elected he resigned to take charge of the Bureau of Mental Hygiene, a new department of the State Board of Public Welfare. Although at this time nearly threescore years and ten "his eye was not dim, nor his natural force abated," and he took hold of the new work and the new department with characteristic zeal and energy. In the development of the work, lack of funds constituted a serious handicap, but he did much in his department along educational lines which cannot fail to bear fruit. Eliminating the time spent as City Manager he spent a total of about forty-four years—nearly half a century—in psychiatric work. Never during all this time was his interest diminished in the problems relating to the care and treatment of the mentally afflicted, and to the prevention of mental diseases and defects. Only a short time before his death, when talking was plainly an effort, his friends found it difficult to keep him from discussing the problems of his work.

While Dr. Drewry spent the greater part of his life as an administrative officers in a State hospital, his activities extended to and touched many things beyond the confines of the institution. These things almost invariably, however, were more or less closely related to his specialty. He was active in the councils of both the State Medical Society and the National Psychiatric Association. He did a vast amount of medico-legal work, having been connected in the capacity of expert with some of the most noted criminal trials in Virginia. He was probably more than any other one man responsible for the organization of the State Board of Charities and Correction, which later broadened into the Department of Public Welfare. In much of the legislation relating to the State hospitals, and, in the writing of the code sections concerning the criminal insane, he rendered valuable assistance. As a member of a commission authorized by the legislature in 1895-6 to study State care of epileptics, he did signal service, and the report of this commission, written by him, together with his subsequent efforts and those of his associates, led to the establishment by the State of the Colony for the Epileptics and the Feeble-Minded at Lynchburg. It would be difficult even to name the various social agencies and activities which enlisted his interest and to which he gave assistance. He was intensely interested in everything which had a bearing upon the thing which he had chosen as his life work.

As a writer upon subjects relating to his specialty, Dr. Drewry was not idle. While assistant physician, he began to write, and we find among his published papers during this period: "The Care of Epileptics

on the Colony Plan"—1894; "State Provision for Epileptics"—1895; "Commitment of the Insane in the Southern States"—1895; "Chronic Progressive Chorea"—1895; "Duplex Personality"—1895; "Circular Insanity"—1895, and "Feigned Insanity"—1896. After becoming superintendent of Central State Hospital he wrote "Epilepsy and State Institutions for Epileptics"—1899; "The Present Status of Insanity in Virginia"—1900; "Clinical Study of Thyroid Extract"—1900; "The Present Status of Epileptics in Virginia"—1901; "Provision for the Criminal Insane"—1902; "Evolution of Psychiatry, or Progress in the Care and Treatment of the Insane"—1904; "The Commission of Lunacy—Its Scope and Limitations"—1905; "Benjamin Blackford"—(Memorial)—1906; "Randolph Barksdale"—(Memorial)—1908; "Robert J. Preston"—(Memorial)—1908; "Care and Condition of the Insane in Virginia"—1908; "Correlation of the Physician and the Layman" (President's address—1908—Medical Society of Virginia); "Epilepsy and its Treatment"—1908; "Public Care of the Insane and Epileptic"—1909; "State Care of the Insane"—1909; "The Epileptic"—1909; "The Insane"—1909; "Pellagra—a Clinical Study and Report of 14 Cases"—1909; "Some Observations on Pellagra"—1909; "Utility of Organization" (President's address—1910—Association for the Study of Epilepsy and the Care and Treatment of Epileptics); "The Scope of the Activities of the Alienist," (President's address—1910—American Psychiatric Association); "The Mental Defectives"—1911; "Incipient Insanity"—1911; "Social Service among the Insane and its Value in the Prevention of Insanity"—1915; "The Feeble-Minded"—1916; "First Aid to the Insane"—1920; "The Outlook for the Insane and Feeble-Minded in Virginia"—1921, and "Mental Disease as a State Problem and Responsibility"—1923. In the preparation of "The Institutional Care of the Insane in the United States and Canada," Four Volumes, edited by Dr. Henry M. Hurd, he wrote a large portion of the section relating to Virginia. These and other writings of Dr. Drewry constitute a not unimportant contribution to psychiatric literature. His annual hospital reports are full of interest, and are characterized by clearness and completeness, and while they may appear to deal unduly with detail, yet they have the merit of being finished journals, covering the period from the beginning to the end of each fiscal year. I doubt if a single important item of hospital activity or growth was omitted, and from them alone may be obtained an accurate history of the hospital during the period represented by his superintendency. I have always looked upon these annual reports as splendid examples of what a hospital report should be.

Dr. Drewry kept abreast of the latest and most approved methods in the care of the insane, and was quick to adopt what appealed to him as worthy. Segregation of the tuberculous, the epileptics, the criminal insane, the suicidal, and other groups, was instituted at The Central State during his superintendency. I believe it is true (I have never heard it denied), that he was the first superintendent to abolish all forms of mechanical restraint of patients in a large State hospital.

Honors came to him not a few. He was president of the Medical Society of Virginia in 1907-8; of the American Psychiatric Association, in 1910; of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics, in 1910, and of the State Tuberculosis Association in 1928. He was for eight years a member of the Board of Visitors of the University of Virginia. He served for many years on the National Committee for Mental Hygiene, and at the time of his death he was a member of the Governor's Advisory Board on Mental Hygiene. While superintendent of the Central State Hospital he was offered the superintendency of other hospitals, including that of one of the Virginia hospitals for the white insane, all of which he declined, to remain where he had first put his hand to the plow.

It is worthy of note that although in 1831 an uprising of negroes led by Nat Turner, an insane negro preacher, led to the slaughter of many prominent families of Southampton County, including several members of Dr. Drewry's family, he, their descendant, gave his life and his best efforts to the care and treatment of insane negroes. While the mentally afflicted without discrimination as to race or creed had his sympathy, yet his life work was among and for those of the negro race.

It would be presumptuous for me to attempt in a few words to evaluate the sum total of Dr. Drewry's service to society, for his contacts with humanitarian organizations and activities were numerous, and his touch was often evident where his name was not written.

Ever did Dr. Drewry impress those who knew him as being intensely in earnest and as being possessed of boundless energy. The comic sheet and the flippant joke had little meaning for him, or else he felt that he had not time to indulge over much in humor. He worked early and late and took little if any recreation, as commonly understood. While he recognized the need of it for others, a vacation for him was just so much lost time, and what passed for his vacations was so combined with work or study that it would hardly be recognized as such by those of us who feel the occasional need of golf, fishing, hunting, and what not.

But I suspect there was a Dr. Drewry that few of us knew. From a mutual friend who was privileged to know something of the intimacies of the "inner circle" of his home I have learned that it was there that he cast off from him as a garment the attributes of the executive and the alienist, and became only the genial companion of his children and the affectionate husband. Who knows but that it was here he found all the recreation he desired, and here that he recuperated and gathered the inspiration and stored the energy which enabled him to carry on. May he rest peacefully "till the Master of all Good Workmen shall set us to work anew!"

Correspondence

Report of a Peculiar Abnormality.

TO THE EDITOR:

Mrs. J. H., age twenty-one, reported to my office when six months pregnant. She was the picture of health. Blood pressure 120 over 90, urine negative, bowels regular, teeth and tonsils negative, pelvic measurements good. Family history satisfactory, except that her mother was nervous and had heart trouble. Two months later I was called to see her and found her in labor. She stated that for the past month she had felt no foetal movements. Labor went on satisfactorily and the baby was born dead but when I looked for a cord, there was none. The baby weighed three pounds, had double club feet, and the liver and part of the intestines were outside of the abdominal cavity. The placenta was expelled by Crede twenty minutes later and was slightly macerated and had a nest in the middle of it where the foetus had evidently lain.

This is the first baby I ever saw without any attachment to the placenta. Would like to hear from any doctor who has had a like experience.

H. C. GRANT, M. D.,
Remington, Va.

October 17, 1934.

Resolutions in Regard to Use of Radium.

TO THE EDITOR:

The following resolutions were passed by the American Radium Society at the Annual Session in Cleveland on June 12, 1934. They have also been approved by the Board of Chancellors of the American College of Radiology and the Section of Radiology of the American Medical Association.

These resolutions are important and worthy of serious consideration.

E. H. SKINNER, M. D.,
Secretary.

WHEREAS, it has been proven that radium and X-rays, when used properly, and in sufficient quantity, is efficient in the treatment of cancer in certain locations, and

WHEREAS, there is a general fear in the public mind from X-ray or radium burns, which because of this fear, prevents competent radiologists from using sufficient radium or X-ray to produce the best results.

BE IT RESOLVED that we as radiologists recognize that in the treatment of malignant disease, it is often necessary to carry the treatment on to the extent of producing a violent reaction in the surrounding tissues, which may cause the skin to peel, and blisters to form, in order to give sufficient treatment to overcome the maligant disease. We believe, therefore, that it is justifiable to produce a second degree radiodermatitis when necessary.

The following resolutions were also adopted by American College of Radiology, June 12, 1934.

THE INDISCRIMINATE USE AND RENTAL OF RADIUM

WHEREAS, it is now recognized that radium has been demonstrated to be of definite value in the treatment of disease, and

WHEREAS, some States and many communities in the country have little or no radium available, and

WHEREAS, funds are not always available for the purchase of suitable preparations of radium for use by those physicians who are qualified in radium therapy, and

WHEREAS, we recognize that radium is an agent quite as potent for doing harm as for doing good when used without sufficient skill or training and with the hope of protecting the uninformed public from serious and irreparable injury from improper and insufficient treatment.

BE IT RESOLVED that we consider it improper, unethical and detrimental to the science of Radiology and to the

good of suffering humanity for commercial laboratories to attempt to give advice or directions as to the use of radium in the case of a patient whom the person giving that advice has not even had the opportunity to examine. In other words, it is just as difficult to give such advice and directions as it would be for a surgeon to give directions for the use of rented surgical instruments so that an untrained physician might attempt an operation. Various commercial companies advertise both in the journals and through the mails, medical advice for the purpose of making sales or renting radium or radon. This places these corporations in the field of practicing medicine.

BE IT RESOLVED that the same criticism be applied to institutions which rent or furnish their radium to those members of their staff or outside of the staff who are unskilled in radium application.

RESOLVED that the same criticism applies to many individual owners of radium.

RESOLVED that we regard the approval of the National Board of Radiological Examiners as the minimum standard for those assuming the responsibility for using radium. We recommend as wide publicity of this Board's existence and approval as is possible to the public, consistent with ethical practices, as the most effective safeguard which can be afforded them.

RESOLVED that we recommend the refusal of advertising matter in National and State Journals when the companies concerned are advertising a Medical Consulting Service or are advertising such service through the mails in connection with their sale or rental of radium.

RESOLVED that we disapprove of any doctor's acting as a Consultant to a commercial company carrying on such a campaign of public or private advertising and that we consider such an association sufficient grounds to warrant disbarment from the approval of the National Board of Radiological Examiners.

RESOLVED that we recognize the ethical commercial company as a necessity. It is the advertised Consulting Service that is at fault. It is recognized that such restrictions on the advertising of a Medical Service will in no way hamper properly qualified Radium Therapists in obtaining adequate supplies of radium or radon for the purposes in which they are qualified to use it.

RESOLVED that we approve an informal Medical Consultant for the guidance of those commercial companies who refrain from advertising such professional service, either publicly or privately and that in such case their informal Consultant be one approved by the National Board of Radiological Examiners.

Public Health Statistics

I. C. RIGGIN, M. D.

Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during October, 1934, showed the following cases compared with the same month in 1933:

	1934	*1933*
Typhoid and Paratyphoid Fever	66	102
Diphtheria	415	534
Scarlet Fever	418	571
Measles	209	40
Meningitis	3	3
Poliomyelitis	13	10
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	2
Undulant Fever	4	4
Tularaemia	1	4
Smallpox	2	0

An examination of the reports of puerperal deaths to the Bureau of Vital Statistics during the first eight months of 1934, in comparison with the same period of 1933, reveals a situation which will probably be of interest to the physicians of the State.

To the end of August there was a total decline of 260 in the number of births, from the low record of 33,277 for 1933, to a new low of 33,017 for 1934. This loss, however, was chiefly colored, their drop being 252 from 10,156 to 9,904, while there was a drop of only eight white births from 23,121 to 23,113.

A more striking part of the report, however, is that though there were fewer births there was an increase in puerperal deaths for the eight months, from 215 with a rate of 6.5 per 1,000 live births, to 237 with a rate of 7.2.

TREND OF MATERNAL DEATHS

JANUARY THROUGH AUGUST, 1934, COMPARED TO THE SAME PERIOD IN 1933, AS RECORDED BY W. A. PLECKER, M. D., STATE REGISTRAR

	Births			Total Maternal Deaths				Puerperal Septicemia and Septic Abortion				Puerperal Eclampsia and Other Toxemias of Pregnancy			
				1933		*1934*		*1933*		*1934*		*1933*		*1934*	
	1933	*1934*		*No.*	*Rate*	*No.*	*Rate*	*No.*	*Rate*	*No.*	*Rate*	*No.*	*Rate*	*No.*	*Rate*
W	23,121	23,113	W	117	5.1	140	6.1	37	1.6	45	1.9	28	1.2	33	1.4
C	10,156	9,904	C	98	9.6	97	9.8	38	3.7	21	2.1	24	2.4	38	3.8
T	33,277	33,017	T	215	6.5	237	7.2	75	2.3	66	2.0	52	1.6	71	2.2

A still more striking feature is that this gain in deaths is all white, the portion of the population using the services of physicians most generally. While there was an increase in white puerperal deaths from 117 with a rate of 5.1, to 140 with a rate of 6.1, there was an actual decline in colored deaths of one, from 98 with a rate of 9.6, to 97, with a rate of 9.8. The slight increase in the colored rate is due to the decrease in number of colored births, which is the basis upon which the rate is calculated.

As we proceed, the facts become more startling when we observe that though the total deaths from puerperal septicemia and septic abortions decreased from 75, with a rate of 2.3, to 66, rate 2.0, the total decrease, and more, was due to saving in colored deaths which fell from 38 with a rate of 3.7, to 21, rate 2.1, or a decline of 43.2 per cent in rate. The white septic deaths increased from 37, rate 1.6, to 45, rate 1.9, or a rate increase of 18.7 per cent.

In puerperal eclampsia and other toxemias of pregnancy there was a startling total increase from 52 with a rate of 1.6, to 71, rate 2.2. The rate increase was 37.5 per cent. Here, however, the increase was largely colored, the deaths rising from 24, rate 2.4, to 38, rate 3.8, or a rate increase of 58.3 per cent. The white toxemia deaths rose from 28, rate 1.2 to 33, rate 1.4, a rate increase of 16.6 per cent.

I am giving these estimates without comment other than that people during the depression have been employing midwives somewhat more freely than before.

The infant death rate also shows an increase which may be discussed at a future time.

We have three requests to make of physicians when reporting puerperal deaths:

1. Give the exact cause—septicemia, eclampsia, hemorrhage, et cetera.

2. To protect yourselves, always state on back of certificate that a midwife began the case, when such is the fact. If possible, note in septic cases whether or not she made digital examinations. Midwives are forbidden to do this.

3. We desire to know when pregnancy or labor complicates deaths reported from other causes. To illustrate—deaths from acute nephritis, pyelitis, embolism and septic pneumonia, with pregnancy or labor, are classified as puerperal.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Minutes of Annual Meeting of the Woman's Auxiliary, Medical Society of Virginia.

The twelfth annual meeting of the Woman's Auxiliary of the Medical Society of Virginia was held at Alexandria on Wednesday, October 10, at 10:30 A. M. at the Belle Haven Country Club.

The meeting was called to order by the President, Mrs. William Lett Harris, of Norfolk, and the invocation was offered by the Reverend Percy Hall, of Alexandria.

Mrs. Llewelyn Powell extended a welcome to the visiting members of the Auxiliary, and Mrs. J. Allison Hodges responded to this.

Mrs. G. T. Klipstein made an announcement of the arrangements for entertaining the Auxiliary and invited all present to attend the social features the Alexandria Auxiliary had planned for them.

Twenty-nine (29) delegates answered roll call, Richmond having the largest number (twelve) present. There were fifty (50) women present at this meeting and it was reported that fifty-five (55) had registered at the hotel.

Mrs. Elmore Jones being absent Mrs. M. N. King conducted the memorial service for Mrs. W. P. McDowell, of Norfolk, and Mrs. Louis Richman, of Newport News, both of whom had passed on since the last meeting.

The minutes of the Lynchburg meeting in 1933 were read and approved.

The minutes of the 1934 pre-convention executive board meeting were read and approved.

The recommendations from the executive board were voted upon and carried.

Mrs. Snead called attention to exhibits and urged that each Auxiliary bring or send an exhibit next year.

The reports of all officers, chairmen, and county presidents, were read, approved, and accepted.

The president, Mrs. William Lett Harris, read her annual report which was accepted with a rising vote of thanks.

Mrs. J. B. Stone, of Richmond, gave the report from the National Convention held in June, 1934.

Mrs. Lee E. Sutton, Jr., gave the report from the Southern Convention held in Richmond last November. On behalf of Virginia, Mrs. Harris thanked the Richmond Auxiliary for the delightful hospitality at this meeting.

Mrs. J. Allison Hodges as the historian and chairman of archives requested that all records, plans, and programs of State officers and chairmen be kept and put in a permanent place for reference by new officers in order to get a continuity of effort.

Mrs. Harris appointed Mrs. Southgate Leigh delegate from Virginia for the 1934 meeting of the Southern Medical Association to be held in San Antonio, November 13-17.

The nominating committee presented the names of the following officers for the coming year:

President, MRS. JOSEPH BEAR, Richmond.
President-elect, MRS. FLETCHER WRIGHT, Petersburg.
1st Vice-President, MRS. HAWES CAMPBELL, Enfield.
2nd Vice-President, MRS. MEADE EDMUNDS, Petersburg.
3rd Vice-President, MRS. ELMORE JONES, Portsmouth.
4th Vice-President, MRS. W. S. SNEAD, Newport News.
Recording Secretary, MRS. J. B. STONE, Richmond.
Corresponding Secretary, MRS. AMBROSE MCGEE, Richmond.
Treasurer, MRS. REUBEN F. SIMMS, Richmond.
Parliamentarian, MRS. LEE E. SUTTON, JR., Richmond.

This report was accepted and the above officers duly elected.

There being no further business the meeting adjourned, after which a delicious luncheon was served by the Alexandria Auxiliary. During luncheon Mrs. Harris extended a welcome to the ladies from the Washington Auxiliary who were our guests. She presented to the Auxiliary a beautiful leather bound book for keeping Auxiliary records as a token of her interest and affection.

RUTH PENDLETON HARRISON WILSON,
(MRS. FRANKLIN D. WILSON),
Acting Secretary.

Resolutions on Death of Mrs. Richman.

The Auxiliary to the Warwick County Medical Society, at the monthly meeting, October 17, 1934, passed the following resolutions:

WHEREAS, Mrs. Sadie Kirsner Richman, who has served this Auxiliary faithfully as Treasurer, was, on October 5, 1934, removed from our midst by death.

BE IT RESOLVED, That in the death of Mrs. Sadie Kirsner Richman, the Auxiliary to the Warwick County Medical Society has sustained an irreparable loss;

BE IT FURTHER RESOLVED, That a page in the Minute Book of this Auxiliary be set aside and dedicated to her memory and a copy of these resolutions, with expressions of our deepest sympathy, be presented to her family and to the JOURNAL of the Virginia Medical Society.

EVA FALKENER,
MABEL O'H. POTTER,
ROSALIND M. BEECROFT,
Committee.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A M.. A.

Bilhuber-Knoll Corporation
  Dilaudid Rectal Suppositories 1/24 grain.
Grisard Laboratories
  Scillonin
    Tablets Scillonin, 0.5 mg.
    Solution Scillonin.
Mallinckrodt Chemical Works
  Phenobarbital Sodium.
Parke, Davis & Co.
  Diphtheria Toxoid, Alum Precipitated (Refined)—P. D. & Co.
E. R. Squibb & Sons
  Sterile Ampules Procaine Hydrochloride—Squibb (Crystals) for Spinal Anesthesia, 50 mg.
  Sterile Ampules Procaine Hydrochloride—Squibb (Crystals) for Spinal Anesthesia, 100 mg.
  Sterile Ampules Procaine Hydrochloride—Squibb (Crystals) for Spinal Anesthesia, 120 mg.
  Sterile Ampules Procaine Hydrochloride—Squibb (Crystals) for Spinal Anesthesia, 150 mg.
  Sterile Ampules Procaine Hydrochloride—Squibb (Crystals) for Spinal Anesthesia, 200 mg.
Supplee-Willis-Jones Milk Co.
  Supplee B. Acidophilus Milk.

PROPAGANDA FOR REFORM

Erysipelas and Prodigiosus Toxins (Coley).—The Council on Pharmacy and Chemistry reports that in 1910 the preparation "Erysipelas and Prodigiosus Toxins—Coley" had been sufficiently investigated to warrant its inclusion in New and Non-official Remedies. At that

time it was estimated to effect a cure in from 4 to 9 per cent of cases of inoperable sarcoma. However, in 1914, New and Non-official Remedies was revised to state that while this remedy is said to have benefited and produced cures in a small percentage of cases treated, there is some difference of opinion as to this. Because of this relatively indefinite status of the product, it was deemed expedient at the time of its reconsideration this year to review the situation with a view to the elaboration, of a more specific and explicit estimate of the therapeutic utility of the preparation and of its limitations. It appears that (1) the combined toxins of erysipelas and prodigiosus may sometimes play a significant role in preventing or retarding malignant recurrence or metastasis; (2) occasionally they may be curative in hopelessly inoperable neoplasms; (3) probably their value is rather strictly limited to tumors of entodermal or mesodermal derivation and, more particularly, in the case of bone tumors, to those exhibiting little or no osteoplasia. The Council has for these raesons retained Erysipelas and Prodigiosus Toxins—Coley, in New and Non-official Remedies, with a view to facilitating further studies with the product, especially in connection with its use as a prophylactic in conjunction with conservative or radical surgery. Its use in definitely inoperable cases may be quite justified, in many instances, as a desperate attempt to combat the inevitable. (Jour. A. M. A., October 6, 1934, p. 1067.)

Iron and Copper Retention in Children.—As a result of experimental studies during the last six years, the necessity of both iron and copper in the cure of "nutritional" anemia, the condition resulting from the consumption of an exclusive milk diet, has been emphasized. However, one commentator has stated that the claims for the efficacy of copper in the treatment of clinical anemias have not thus far been convincing. Nevertheless the known indispensability of iron and the possible essential nature of copper lend interest to a recent investigation by Daniels and Wright of the requirements of these two metals in children. The conclusion was reached that 0.6 mg. of iron daily per kilogram "should meet the needs for maintenance and growth of the average child of the age studied." It was tentatively suggested on the basis of the observations that at least 0.1 mg. of copper per kilogram of body weight should be contained in the daily food of children of pre-school age. It is of interest that in this investigation almost all (from 93 to 98 per cent) of the excreted copper and iron appeared in the feces. The fact that on the higher levels of retention of copper there was a fairly close proportion between iron and copper retention (5:1) may indicate that there is in man also an interrelationship between the metabolism of iron and of copper. (Jour. A. M. A., October 13, 1934, p. 1154.)

Hyperpyrexia Produced by Physical Agents.—Recently a survey of hyperpyrexia produced by physical agents has been carried out by the Council on Physical Therapy. The object of the survey was to evaluate the efficacy and to determine the dangers connected with the production of fever by physical agents. A list of questions was sent to physicians who have published articles on the subject of hyperpyrexia or have in some way been familiar with the subject. Several sources of energy were reported as having been tried; for example, diathermy, radiant energy, hot water baths, and various sources of high frequency current. Of this group questioned, more physicians made use of diathermy than any other method. Radiothermy, produced by either tubes or spark gap, came next. After a careful study of this survey the Council believes that to subject a patient to an artificial fever of from 105 to 106 F., sustained for five hours or more, is to subject him to a fairly strenuous cardiovascular functional test. Patients with myocardial degeneration or with valvular, coronary or other cardiac abnormalities, with impaired renal function from organic disease, with excessively high blood pressure or arteriosclerosis, or with tuberculosis, diabetes or far advanced syphilis of the central nervous system do not tolerate such treatment well and should not be subjected to it. The Council on Physical Therapy realizes that this preliminary survey is far from complete. However, the survey does show that the treatment of disease by means of hyperpyrexia is now established but that the best method for administering artificial fever induced by physical agents that can be employed with safety, convenience and comfort to the patient and is subject to complete control by adequately trained physicians is not firmly established. The Council believes that this method should be used only in hospitals, surrounded with the safeguards commonly employed in a major surgical operation and under the direction of physicians. The assisting technician should have ample training and experience and must be capable of recognizing untoward sympomts and know ways of avoiding dangers. (Jour. A. M. A., Oct. 27, 1934, p. 1308.)

The McIntosh Electrical Corporation and The American College of Physical Therapy.—In The Journal, September 23, 1933, p. 999, the Council on Physical Therapy authorized publication of the report dealing with the American College of Physical Therapy, 5 North Wabash Avenue, Chicago. Announcements of the "College" advertising the alleged postgraduate course and clinics in physical therapy were attached to advertising matter of the McIntosh Electrical Corporation. Subsequently, a letter was received from the McIntosh Electrical Corporation by the Secretary of the Council on Physical Therapy, definitely denying any present affiliation with the American College of Physical Therapy. (Jour. A. M. A., April 7, 1934, p. 1153.)

Dinitrophenol Poisoning.—Two more cases of sudden death from poisoning with dinitrophenol have been reported in The Journal, April 7, 1934, p. 1141; *ibid,* p. 1147. The authors review the available literature on the subject, which would seem to indicate that the drug is treacherous and that its administration, as has been previously emphasized in The Journal, should invariably be under the control of a physician. As is usual with any drug

used for cosmetic purposes, commercial interests have promptly entered the field of exploitation of dinitrophenol. There is not the slightest doubt that vast numbers of people are taking this preparation both with and without the advice of their physicians. Physicians who administer the drug to their patients should inform them thoroughly concerning such dangerous manifestations as increased temperature, severe urticaria and pruritus, and recommend immediate discontinuance of the preparation on the appearance of any symptoms of this character. (Jour. A. M. A., April 7, 1934, p. 1156.)

Book Announcements

The Compleat Pediatrician. Practical, Diagnostic, Therapeutic and Preventive Pediatrics. For the Use of Medical Students, Internes, General Practitioners, and Pediatricians. WILBURT C. DAVISON, M. A., D. Sc., M. D., Professor of Pediatrics, Duke University School of Medicine, and Pediatrician, Duke Hospital; Formerly Acting Head of Department of Pediatrics, The Johns Hopkins University School of Medicine, and Acting Pediatrician in Charge, the Johns Hopkins Hospital; etc. Durham, N. C. Seeman Printery for Duke University Press, 1934. (Adaptation of the Title Page of *The Compleat Angler*, by Izaak Walton, 1653. Octavo. Cloth. Price, $3.75.

"Pediatric Notes," edited by Dr. Davison, appeared in print in 1926. This little book contains chiefly information on laboratory procedures, as well as treatment as carried out at Johns Hopkins Hospital. On account of its size, this book, containing concise and well directed information, makes a handy companion for any general practitioner, with the result that some of these books have traveled many miles in the bags of their owners. The one I have continually carried in my bag is beginning to show wear, so I am now ready to welcome another such manual.

Dr. Davison has evidently planned to have "The Compleat Pediatrician" replace his former book, as it contains in addition to the old material a great deal of new subject matter, which is found chiefly in the first two chapters of the book.

Chapter One gives a list of symptoms, under which are listed the diseases in which the symptoms appear. The physician upon examining a case finds certain symptoms. He turns to Chapter One and notes the diseases listed under the symptoms recognized in the patient. These diseases are listed in Chapter Two, where there are to be found under each disease the symptoms pertaining to that disease. By consulting the two chapters a diagnosis is to be worked out.

The author states that there are 307 diseases listed and each disease has been treated by giving (1) definition, (2) preventive measures, (3) incidence, (4) symptoms and signs, (5) differential diagnosis, (6) laboratory tests, (7) treatment, (8) prognosis. The remaining chapters of the book deal with subject matter which is classified as follows: III. Preventive Measures and Child Care, IV. Administration of Fluids and Blood, V. Feeding of Normal Infants and Children, VI. Drugs and Prescriptions Frequently Used in Pediatrics, VII. Laboratory Methods.

Upon opening the book one notices a numerical system of cross-indexing. All the symptoms, signs, diseases, methods of treatment, preventive or therapeutical, as well as drugs and prescriptions, are given a number for reference. The numbers run in order throughout the book and at the top of each page are indicated the numbers found on that page. This facilitates the finding of the information desired.

When the diagnosis is made Chapter Two is further consulted for information regarding this disease. Should preventive measures for this disease be sought, one will find them listed under the disease. Each measure has a reference number and when located, there will be found an explanation of how the measure is to be carried out. The same procedure is to be carried out for treatment, laboratory tests, etc.

The information which one receives concerning a disease is very concise and brief, so much so that at times the information given does not always hold. One will not find the information on symptoms and diagnosis as helpful as that on treatment with its methods of procedure.

The chapters on prevention, therapy, methods of treatment and laboratory procedures will be found to be modern and up to date, as well as quite helpful in time of need. I expect to have "The Compleat Pediatrician" as a constant companion and can recommend it to a fellow physician.

Dr. Davison is to be commended for his splendid effort to help the practitioner.

L. E. SUTTON, JR.

Practical Talks on Heart Disease. By GEORGE L. CARLISLE, M. D., Associate Professor of Clinical Medicine, Baylor University, Dallas, Texas. Charles

C. Thomas, Springfield, Ill. 1934. Octavo of 153 pages. Cloth. Price, $2.00.

The author of this monograph of 140 pages has undertaken to present, largely from his own experience, that information which he feels will be useful to the practitioner of medicine in the care of patients with heart disease.

The book is divided into six subdivisions:

Part I. Fundamental Facts which Must Be Known in Order to Make a Clinical Investigation of the Heart.
II. Chronic Heart Disease.
III. Acute Heart Disease.
IV. Irregularities of the Heart.
V. Heart Pain.
VI. Special Types of Heart Disease.

In the preface he emphasizes the fact that the book is designed largely for the "general practitioner" and not for the "specialist." Generally speaking the author has accomplished in an admirable way the purpose for which the book is designed, nevertheless, there are certain defects which are invariably inherent in any small monograph which undertakes to cover such a large field. This attempt naturally leads to dogmatism and it is doubtful in the reviewer's mind whether a book of this character is not much safer in the hands of the specially trained than in the possession of the practitioner of medicine who has not kept abreast of the tremendous progress in cardio-vascular disease which has occurred during the past twenty-five years.

The reviewer cannot agree with the statements referable to "mitral regurgitation" for there certainly exist patients in whom this functional disturbance of the mitral valve is a most prominent feature. To say that all systolic murmurs heard in the apex regardless of their quality and character are of no significance is a rather broad statement and I doubt if it is a justifiable conclusion. In many patients with acute bacteriological endocarditis a systolic mitral murmur represents the most important physical phenomenon. It is true that mitral insufficiency, *per se*, does not kill the patient. The same can be said about mitral stenosis, nevertheless, one would hesitate to say that the auscultatory phenomena of mitral stenosis were of no significance simply because the majority of such patients die from congestive heart failure induced by auricular fibrillation and active myocarditis.

Under the discussion of arteriosclerotic heart disease emphasis is placed upon the presence of cardiac enlargement. It is true that cardiac enlargement exists in the greater percentage of such patients, nevertheless, patients with hearts normal in size frequently succumb to coronary occlusion which must be interpreted as an evidence of arteriosclerotic heart disease.

Under the discussion of the treatment of rheumatic heart disease, the essayist leaves the reviewer with the impression that the salicylates are useful in preventing serious cardiac complications in rheumatic fever. This is not in accordance with the views of many. The salicylates undoubtedly modify the exudative lesions but probably have no effect upon the proliferative pathologic processes. It is to be remembered that the proliferative lesions are responsible for most of the serious cardiac damage. One also doubts the justification for the enthusiasm which the writer has for the therapeutic use of Small's "S.C.A." products. Certainly, the observations of those who have wide experience in the treatment of rheumatic fever do not justify such an enthusiastic approval as is evidenced by the space given in this book to the discussion of these products. The writer emphasizes the frequency of embolic phenomena in rheumatic fever and refers to lesions which the reviewer feels are commonly accepted as rheumatic nodules. I doubt if he is justified in concluding that these are embolic in nature.

The monograph as a whole is useful, nevertheless, there are other monographs dealing with the same subject which are just as concise and probably not handicapped by dogmatic statements which are not substantiated by commonly accepted clinical and pathologic principles.

WM. B. P.

Health, Happy Womanhood. A Pamphlet for Adolescent Girls and Young Women. Issued by the Treasury Department of the United States Public Health Service, Washington, D. C. V. D. Bulletin No. 60. United States Government Printing Office. 1934. Pamphlet of sixteen pages. For sale by the Superintendent of Documents, Washington, D. C. Price, five cents.

Keeping Fit. A Pamphlet for Adolescent Boys. Issued by the Treasury Department of the United States Public Health Service, Washington, D. C. V. D. Bulletin No. 55. United States Government Printing Office. 1934. Pamphlet of fifteen pages. For sale by the Superintendent of Documents, Washington, D. C. Price, five cents.

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Editorial

A Pioneer Psychiatrist.

I met William Francis Drewry first perhaps in 1906, soon after I had become a member of the medical staff of the State Hospital at Morganton, N. C. He had come there on a visit to Dr. Murphy, the superintendent. Dr. Drewry looked to be but a youngster, and he was so vital and so active and so alert and possessed of such boundless energy that I supposed he had but recently finished at some medical school and had only lately entered upon the practice of mental medicine. I was all but amazed by the discovery that he had been a member of the Staff of the Central State Hospital at Petersburg in Virginia for twenty years, and the superintendent of that institution for the latter half of that period.

A few years afterwards I came to Virginia to live, and during the remainder of his life I knew him by intimate professional and personal association. His spirit was never touched by the roll of the years, and until death neared him a year ago he was buoyed and sustained by the spirit of youth. It is true that he had entered upon life a year before the outbreak of the Civil War, and that all of his days were spent in an area that had been a battlefield, but he indulged little in retrospection. He looked forward eagerly for the morrow, and in his aspirations, his hopes, and his plans, he remained ever young, ever dynamic, ever optimistic, ever undaunted.

His spirit was that of the pioneer. Soon after he became assistant physician he began to contribute to medical literature. At that period little was written about mental disease, especially in the South, and it was almost an unheard-of thing for a mere assistant physician to voice an opinion about a medical problem. Dr. Drewry continued to write, and through his executive work and by his contributions to psychiatric literature he became the outstanding alienist, as psychiatrists were then called, in the Southern States.

Almost immediately after the evacuation of Richmond the Central State Hospital had its beginning in a tent or in some sort of shack near the city, and the splendid institution near Petersburg is the outgrowth of that humble beginning. I think it probable that the Central State Hospital was the first hospital in the United States exclusively for Negroes; it was certainly the first institution in our country for the care solely of the mentally sick Negroes. When Dr. Drewry was promoted to the superintendency the State of Virginia was still pauperized, and there was little money available for the public welfare. But his purpose was to transform an asylum—a place of custodial care—into a modern hospital in which both the sick mind and the sick body should be ministered to. He liberated the patient by abolishing mechanical restraint; he liberated the people of the State from their ignorance of mental sickness by appeals to them directly and through the legislative body. As an expert medical witness in many a courtroom he educated judges, lawyers, jurors, and the public in psychiatry. He taught them that a quiet, courteous, self-possessed

individual might be a homicidal paranoiac or a suicidal melancholiac or an epileptic. In that field he was an educator—and Virginia's first Professor of Psychiatry. I doubt not at all that for a generation he formulated most of the statutory enactments in Virginia relating to medico-legal medicine and to the care of the mentally abnormal. And in that domain he was the pioneer medical statesman.

Dr. Drewry was a diffident man, embarrassed always by public appearance, in the courtroom or elsewhere, but he was courageous, persistent, hopeful, and resourceful, and always his dominant thought was about the mentally sick. He labored unceasingly, and he permitted no discouragement to chill his enthusiasm.

In his latter years his thought was devoted to mental hygiene—to wholesome living—and in his Bureau in the State's Department of Public Welfare he carried on with unabated activity. He himself lived wholesomely and enthusiastically and usefully and that was his ideal for his fellow-citizens. Virginia has never had upon her official roster a more loyal and unselfish and devoted public servant.

J. K. HALL.

Shall a Layman Head the Veterans' Hospital?

Disquieting rumors are afloat to the effect that a layman is shortly to be placed in charge of the new Veterans' Hospital near Roanoke. It has been intimated also that the Veterans' Bureau, at present centrally located in Richmond, is to be moved to the same vicinity and that the combined Hospital and Bureau will be called a Veterans' Bureau Facility. The word "Facility" seems to be of political coinage, being employed where for political reasons it might be embarrassing to call a hospital a hospital. Experience has shown that when a government hospital is designated "a facility" no impropriety exists in placing over it a layman rather than a physician. Many doctors are viewing with alarm the steady encroachment of government into the ancient domain of private medical practice. If medicine under government control means political manipulation, as has been the charge in the case of providing post-war medical care for the World War veterans, then it is high time that the voice of a united profession was being raised in protest.

The President Turns to Medicine.

A few days ago ten physicians were summoned to Washington to serve in an advisory capacity to the President's Committee on Economic Security. The physicians were Dr. Harvey Cushing, professor of neurology at Yale, chairman; Dr. Stewart R. Roberts, professor of clinical medicine at Emory University; Dr. George Crile, of the Cleveland Clinic; Dr. Thomas Parran, Jr., New York State Health Commissioner; Dr. James Alexander Miller, professor of clinical medicine at the College of Physicians and Surgeons, New York; Dr. Walter L. Bierring, of Des Moines, Iowa, president of the American Medical Association; Dr. Robert B. Greenough, Boston, president of the American College of Surgeons; Dr. George M. Pierson, of Philadelphia; Dr. J. Shelton Horsley, Richmond, Va.

It appears fairly certain that unemployment insurance and old age pensions are the President's immediate objectives. It is equally clear that as soon as laws concerning these matters are safely through Congress, legislation dealing with the medical care of the American people is going to be proposed. One can only surmise concerning the direction it will take, but few doubt that we are in for a wide extension of the functions of the public health service and the inauguration of sickness insurance on a national scale.

The medical advisers to the President's Committee on Economic Security appear to have been well chosen. They will undoubtedly be able to assist the administration in realizing its object of making medical service available to every man, woman and child in this country regardless of economic status. In accomplishing this end it is important that they be on their guard against measures inimical to the best interests of the medical profession.

At this stage probably only one thing is certain: a grave responsibility rests upon the President's medical advisory committee.

What Do We Know About Arthritis?

Under the presidency of Ernest E. Irons, the first meeting of the American Association for the Study and Control of Rheumatic Diseases was held last June in Cleveland. In general it might be said that prevalent ideas concerning the cause and treatment of arthritis need not be modified immediately as a result of any startling discoveries advanced before this meeting. On the whole its spirit seems to have been iconoclastic.

Attention was focused chiefly upon atrophic arthritis as the most serious and least understood

of the several types of the disease. A blow was levelled at the etiological role of foci of infection in the report of a large series of cases in which the incidence of such foci of infection was shown to be just as great in hypertrophic arthritis, which every one agrees has no relation to infection. The advocates of this point of view, faced with these facts, had no difficulty in falling back upon the assumption of an arthritic diathesis, maintaining that the soil upon which bacteria are implanted is the determining factor in the individual case.

There was apparently considerable disagreement over a number of other problems related to the disease. For instance, after assuming the etiological role of the streptococcus, no one could say whether its injury was metastatic, toxic or allergic. There was noticeable lack of harmony also among the various bacteriological reports of cultures of the blood and joint tissues. Contradictory statements concerning the presence of specific agglutinins in the blood and the disagreement over the significance of specific skin reactions were noticeable. The importance of vasomotor changes in arthritis was stressed by Kovacks and belittled by Hench.

When treatment was discussed the concensus of opinion seemed to favor (1) the removal of foci of infection (although few patients appear to benefit from it); (2) vaccination (although its virtues appear to remain yet unproven); (3) the restriction of carbohydrates (as possibly reducing joint swelling through dehydration); and (4) the placing of very little reliance upon drugs. It was conceded that mecholin, orally or by iontophoresis, through its vasomotor effects, might increase joint circulation and promote transient improvement. It was agreed that reliance was still to be placed primarily in the judicious use of rest and exercise, physiotherapy, and the general upbuilding of the patient.

President Irons in summarizing the conference stated that in evaluating any theory concerning the cause and cure of arthritis, full allowance must be made for the effects of psychotherapy and for spontaneous improvement, which is a part of the natural history of the disease. He showed that many factors enter into etiology and no single one is known to be primarily causative, and that therefore treatment must still be largely symptomatic, though this by no means should be interpreted as indicating that there is not much to be done for the relief of sufferers from arthritis.

Birth Control in Virginia.

The Victorian attitude towards sex and its problems has been called one of silence, shame and sham. Now from many sides what appears to be just criticism is being levelled at our Anglo-Saxon reticence. Some rather startling things are being said in the popular press. John H. Preston's article in the July number of Harper's, *Love Among the Ruins,* is a specimen. The voice of the ministry may be heard in Leslie Weatherhead's *Mastery of Sex Through Psychology and Religion.* The interest of the medical profession may be sensed chiefly in activity over birth control.

Early in this year the journal of the Michigan State Medical Society published the results of a questionnaire answered by more than 1,800 physicians of that state. This "survey of the medical aspects of birth control," states the report, "shows that medical indications for the use of contraceptives vary considerably in the opinions of different observers. It seems to be generally believed, however, that by careful use of contraceptive procedures the health of certain individuals afflicted with disease can be maintained at a higher level and also that by the proper spacing of children and limitation of their numbers a higher health level can be maintained by society in general. It is suggested that a more general use of contraception may aid in decreasing the incidence of abortions with their attendant fetal and maternal mortality and morbidity."

The authors of the report believed that the "Federal Law concerning the transmission of contraceptive information and material through the mails by inter-state commerce has practically been annulled by recent decisions of the Federal Courts."

The attitude of the Church was summed up as follows: "While the Catholic Church is irrevocably opposed to any form of contraception advanced by Birth Control advocates, the opinion held by Protestant Churches is in a state of transition, a few denominations openly advocating such procedures, some gradually approving under more rigid interpretations, while others are still belligerently opposed."

It was "suggested that eugenic aims can best be realized by extending the knowledge of contraception to, or by enforcing sterilization upon, undesirable elements of society whose rate of propagation is in excess of that of the apparently more desirable

classes. A judicious birth control program, however, must also combat voluntary and involuntary sterility among the eugenically more desirable elements if the harmful effect of a differential birth rate is to be overcome. In the final analysis the physician must be guided by the social and economic needs of the individual and the family, for what is best for the health, and the social and economic welfare of the individual is undoubtedly best for the race."

The report also brought out the significant fact that contraception is now being formally taught as a part of the curriculum in at least twenty-seven medical schools of this country.

In Virginia this movement has made itself felt within the last year, first in the organization of a Virginia Birth Control League, and second in the establishment of birth control clinics in Lynchburg and Charlottesville and at the Medical College of Virginia.

President's Message

Re-Appointment of Child Welfare Committee.

Last month reasons were given for discharging Special Committees unless or until it became evident that there is need for one or more of them. Such an occasion has arisen, as shown by a communication from Dr. B. B. Bagby, Director of the Bureau of Child Health, Department of Health. Dr. Bagby writes of the assistance given his Bureau by the *Committee on Child Welfare* as follows:

". . . The Committee has always been of material assistance to us in our work. Whenever this Bureau wishes to publish or revise a bulletin the manuscript is sent to the members of the Committee for approval and suggestions. It has also assisted during the year with the Summer Round-Up program by making local addresses and radio talks.

"In addition to the above work it is of especial importance that we have such a committee this year since Miss Ellen H. Smith, Chairman of the Child Hygiene Committee of the Cooperative Education Association, Virginia Branch of the National Congress of Parents and Teachers, expects to make a drive for a larger appropriation for child health work. This appropriation will be spent by the Department of Health for the prevention of disease, by the Department of Welfare to pay local physicians for examination and treatment of indigent school children, and by the Medical Society of Virginia, the Medical College of Virginia and the University of Virginia for continuation of their post-graduate courses for general practitioners. She will need your Committee to help her work out this program in a way that will be most acceptable to the State authorities. Probably at no time has this Committee been needed more than now . . ."

It is with pleasure, therefore, that we offer the cooperation of the Medical Society of Virginia to the State Board of Health in its work of Child Welfare by appointing the *Committee on Child Welfare:*

DR. W. P. JACKSON, Roanoke, *Chairman.*
DR. L. T. ROYSTER, University, Va.
DR. F. D. WILSON, Norfolk, Va.
DR. CHAS. E. CONRAD, Harrisonburg, Va.
DR. R. D. BATES, Newtown, Va.
DR. J. BOLLING JONES,, Petersburg, Va.
DR. J. B. STONE, Richmond, Va.
DR. E. M. Chitwood, Wytheville, Va.

F. H. SMITH, *President,*
Medical Society of Virginia.

Department of Clinical and Medical Education of the Medical Society of Virginia

Lecture Notes by Doctors Lapham and Lyon Available.

Several sets—perhaps as many as one hundred—of the mimeographed lecture notes of Dr. M. E. Lapham, the Society's special clinician in prenatal and postnatal instruction, whose program was concluded this fall, are available and will be sent free to members of the Society requesting them. A small

number—only about ten—of the mimeographed lecture notes of Dr. George M. Lyon on Pediatrics, used by him in the Leesburg short course on Pediatrics, are available also. "First come, first served." Send your request to the Executive Secretary of this Department, Box 1487, University, Va.

Postgraduate Clinic at University of Virginia Hospital a Success.

The Fourteenth Postgraduate Clinic, conducted by the University of Virginia Hospital, in cooperation with the Department of Clinical and Medical Education of the State Society, was held at the University of Virginia Hospital on November 16th. Forty-five doctors were in attendance. From Virginia they came from as remote centers as Clarke County in the north, Norfolk County in the east and Bath County in the west. The Clinic was also honored by the presence of Dr. A. H. Hopperud, of Saskatchewan, Canada.

The program of the Fourteenth Clinic was novel in character and of an experimental nature. The program was for one day only and consisted of several didactic lectures, followed by discussions.

Visiting guests were as follows:

Dr. R. E. Booker, Lottsburg;
Dr. Frank Tappan, Berryville;
Dr. Carroll Iden, Berryville;
Dr. Chas. Dearmont, White Post;
Dr. A. E. Turman, Richmond;
Dr. H. M. Wallace, Staunton;
Dr. W. H. Turner, Round Hill;
Dr. B. A. Rice, Forest;
Dr. L. G. Roberts, Moorman's River;
Dr. E. G. Scott, Lynchburg;
Dr. J. O. Mundy, Charlottesville;
Dr. John E. Cole, Fredericksburg;
Dr. A. A. Sizer, Schuyler;
Dr. C. W. Scott, Newport News;
Dr. O. W. Carper, Front Royal;
Dr. H. T. Hawkins, Waynesboro;
Dr. A. F. Robertson, Staunton;
Dr. W. A. Murphy, Staunton;
Dr. W. H. Craig, Richmond;
Dr. L. H. Apperson, Richmond;
Dr. J. S. DeJarnette, Staunton;
Dr. M. J. Payne, Staunton;
Dr. G. C. Campbell, Staunton;
Dr. H. F. White, Fishersville;
Dr. H. J. Morton, Stuart's Draft;
Dr. M. B. Jarman, Hot Springs;
Dr. T. H. Daniel, Charlottesville;
Dr. Hunter Williams, North Garden;
Dr. J. J. Waff, Shenandoah;
Dr. B. F. Randolph, Arrington;
Dr. D. E. Watkins, Waynesboro;
Dr. Jeannette M. Jarman, Hot Springs;
Dr. Dan Nichols, Charlottesville;
Dr. B. C. Shuler, Shenandoah;
Mr. W. E. Hisey, Shenandoah;
Dr. W. A. Kyger, Free Union;
Dr. E. D. Davis, Stanardsville;
Dr. Elizabeth Cole, Norfolk;
Dr. C. E. Watson, Broadway;
Dr. J. C. Harshbarger, Harrisonburg;
Dr. A. H. Hopperud, Saskatchewan, Canada;
Dr. P. L. Miller, Mt. Solon;
Dr. K. D. Graves, Roanoke;
Dr. William Jordan, Richmond;
Dr. Anita Lotti, Charlottesville.

Abstracts from Report of Dr. George M. Lyon, Clinician, on the Short Course in Pediatrics in Leesburg.

The Program as Carried Out

a. The classes were informal and the outline was used essentially as suggested and on the days suggested by the Department.

b. Lack of clinical material probably forced on us one of the best features of the course; that is, during the second hour round-table discussions, asking of questions, presentation of their problems, and a common attempt at their solution was productive of a most pleasing result. The physicians felt they received an unusual return from this feature of the program.

c. In accordance with the incidence of problems encountered in the private practice of Dr. Aldrich, which is in accordance closely with my own experience, the problems of the second hour were divided as to time during the two weeks on about this percentage:

Routine care of infants	29 per cent
Infections of upper respiratory tract	23 " "
Acute infectious and contagious diseases	14 " "
Acute pulmonary diseases	8 " "
Health examinations	6 " "
Preventive procedures	4 " "
Gastro-intestinal infections	4 " "
Other conditions	10 " "

A somewhat greater emphasis was placed upon gastrointestinal diseases, on preventive measures and on central nervous diseases than has appeared above.

d. Emphasis was laid upon diagnostic procedures they could follow in their most primitive homes and on treatment procedures they could do there. The simplicity of infant feeding, diagnostic pro-

cedure and treatment even in the more fortunate homes was stressed.

e. Unusual cases, cases they would probably see only once in a lifetime and procedures they could not do without elaborate assistance and material were avoided.

f. A point was made of trying to convince them of the value of developing proper attitudes in their families, not only as to preventive measures to be employed but as to the acceptance of rational diagnosis and therapy as opposed to the type demanding bizarre explanations and placebo medication.

g. Consideration of the feeding problem was facilitated by the use of mimeographed outlines.

h. Materials, methods and procedures actually used in my own office and practice were exhibited, and the group formally requested that if possible they be supplied with copies of these materials and with the bibliography.

i. An attempt was made to carry the sympathy and interest of the physicians at a high level throughout the course.

j. The group requested the Clinician to appear in a public lecture to which were to be invited all the parents of children in the county, those interested in child welfare work, and the Director of Rural Schools and Superintendent of Schools in Leesburg requested their entire teaching staff to be present. This was done and there was a large attendance and the members of the medical profession, about fifteen in all, sat on the stage. The entire affair was originally suggested by the local physicians and carried out in accordance with their active support.

APPRAISAL OF THE PROJECT

From the viewpoint of the ones attending, I believe it was decidedly worth while. Their interest, sympathy and appreciation of the effort was genuine. That it will influence them in many of their practices—it is not so easy to say, because in two weeks' time about all one can do is to assist them in answering and solving some of the individual and specific problems, and for this help they were most grateful. From the viewpoint of the Clinician, it is pleasant, stimulating and gratifying work. From the standpoint of economy, that is cost versus results and accomplishment, I cannot say. From the standpoint of general medical advancement in this and similar communities, I think it is almost the only way to reach the majority of rural physicians. (Similarly, urban general practitioners need and probably should have access to a similar program. Their need is just as great and they should be just as appreciative, particularly in those communities where they do not have hospitals which teach and help the general run of physicians in this respect.)

I believe the men attending were to a man most genuinely pleased with the program and felt it decidedly worth their while to put out the effort necessary to get there and to leave their practice for this time. On at least five different days the men would remain, with only one or two leaving, for an hour or longer after the two-hour period was up. Of their own accord the hours of meeting were placed from three to five instead of four to six in order to make this possible.

The Committee on Clinical and Medical Education to Meet Soon.

The Committee on Clinical and Medical Education, consisting of Dr. R. D. Bates, chairman; Dr. I. C. Riggin, Dr. J. C. Flippin. Dr. Lee E. Sutton, Dr. G. F. Simpson, Dr. P. W. Miles, will meet soon to consider plans for carrying forward the program of postgraduate education. Tentatively the program for this year is to conduct three or four sectional clinics on the subject of pediatrics. However, the committee will welcome suggestions and also invitations from local societies for the proposed lecture-clinics which will be similar to those conducted by Dr. Lapham. Please send your suggestions or requests to the chairman, Dr. R. D. Bates, Newtown, Va.

GEORGE B. ZEHMER, *Executive Secretary, Department of Clinical and Medical Education.*

Proceedings of Societies

The Mid-Tidewater Medical Society

Held its regular quarterly meeting at Millers Tavern in the Arlington Lodge on October 23rd.

At the business session, officers for the coming year were elected as follows: President, Dr. E. L. W. Ferry, Millers Tavern; president-elect, Dr.

Thomas B. Latane, Stevensville; vice-presidents, one from each county, Dr. J. N. DeShazo, Center Cross; Dr. Clarence Campbell, Sparta; Dr. W. S. Cox, Shacklefords; Dr. W. P. Jones, Urbanna; Dr. J. W. Smith, Hayes Store; Dr. R. R. Hoskins, Mathews; Dr. Wm. E. Croxton, West Point, and Dr. J. R. Parker, Providence Forge, and secretary-treasurer. Dr. M. H. Harris (re-elected), West Point.

A delicious luncheon was served the members and guests and members of the Woman's Auxiliary, who also met on the same day.

At the afternoon session, interesting reports were heard from the delegates to the State Medical Society meeting at Alexandria. Dr. R. D. Bates, president of the Medical Society of Virginia for the past year, was present and also made a report of the State meeting.

A symposium on Trauma was presented by Dr. H. Page Mauck and Dr. F. S. Johns, both of Richmond. Discussion of these papers was engaged in by the members of the Society led by Dr. Harry Tabb, of Gloucester.

The Society will meet on the fourth Tuesday in January, at West Point. The new officers will be installed at that time.

The Roanoke Academy of Medicine

Held its first meeting of 1934-35 on October 1st. At this time the following officers were elected for the coming year: President, Dr. W. P. Jackson; vice-presidents, Dr. Paul Davis and Dr. Roger DuBose; secretary-treasurer, Dr. Frank Helvestine. All officers are of Roanoke.

The second meeting of the Academy was on November 5th and at this time Dr. Potter A. Richards, Dr. David B. Stuart and Dr. G. M. Booth were elected to membership. Dr. F. A. Farmer, one of the delegates from the Academy to the Alexandria meeting of the Medical Society of Virginia, gave a brief report on the proceedings of that meeting. The following scientific program was presented:

Collapse Therapy of Pulmonary Tuberculosis—Dr. L. R. Broome.

Discussed by Drs. Ambler, Willis, Nicholls and Trout.

Thrombosis of Left Auricle—Dr. J. E. Gardner.

Discussed by Drs. Ambler and Graves.

It was announced that the next meeting of the Acadamy would be a hospital meeting and would be held at Jefferson Hospital on November 19th.

FRANK HELVESTINE, JR.,
Secretary.

The Medical Society of Northern Virginia,

At its meeting in Winchester, November 15th, elected the following officers for the coming year: President, Dr. C. O. Dearmont, White Post; vice-president, Dr. Frank Tappan, Berryville, and secretary-treasurer, Dr. J. E. Harris (re-elected), Winchester. It was voted to hold the next meeting at Narrow Passage Tavern in Shenandoah County, in April, 1935.

The Petersburg (Va.) Medical Faculty

Held its annual banquet-meeting at the Hotel Petersburg, on November 14th. At the election of officers, held at this time, Dr. D. D. Willcox was elected president for the ensuing year; Dr. Leta J. White and Dr. W. A. Reese, vice-presidents; and Dr. Wilbur M. Bowman was re-elected secretary-treasurer. About twenty-five members of the Faculty attended the meeting.

News Notes

Additional Health Services for Southwest Virginia.

Dr. I. C. Riggin, State Health Commissioner, announces that additional health services will be provided southwest Virginia in the very near future. Location of headquarters is to be at Abingdon, but the personnel will be directly under the supervision of the State Health Department in Richmond. These additional services will provide greater facilities for the control of communicable diseases, better nursing supervision, better control of public water supplies and sewerage systems, and promotion of rural sanitation. They will also provide consultant service when requested for local physicians in communicable diseases. Public Health diagnostic laboratory services will also be rendered.

The particular need for such additional health services in this section of the State is particularly

apparent when its geographical position is considered. The distance from the headquarters of the State Health Department is so great that present health services are necessarily inadequate. This has been very noticeable during the past summer when several minor epidemics occurred in this section.

Dr. Edgar C. Harper has been appointed Medical Director of this additional health service. He is a native of the southwest portion of the State and has had wide experience, both in public health work and in the practice of medicine. For the past six years he has been associated with Dr. Dean B. Cole in private practice in Richmond. During this period he has also acted as consultant to Pine Camp Sanatorium in Richmond and as consultant and clinician to the Henrico County Health Department. He was clincian in the Tuberculosis Outpatient Department of the State Health Department from 1925 to 1928. In 1919 Dr. Harper took a postgraduate course in public health in the School of Hygiene and Public Health at Johns Hopkins University and was later associated with the State Department of Health as a health officer. He expects to enter upon his new duties about the first of the year.

The Christmas Seal.

This year's Christmas seal commemorates the fiftieth anniversary of one of the most significant events in American medical history. It shows a picture of the little one-room cottage at Saranac Lake, New York, in which Dr. Edward Livingston Trudeau began the modern treatment of tuberculosis in February, 1885, and which marked the beginning of the sanatorium movement in this country. The building still stands and is known as the "Little Red" because of its color.

Twenty-seven millions of these Christmas seals (the first commemorative design) are being distributed by the Virginia Tuberculosis Association to its branches in every County of Virginia and all of the cities. Last year in addition to a vast educational campaign, more than $61,000 was spent by the local branches in Virginia for sanatorium board for indigent patients, home care, cost of X-ray pictures, nurses salaries and child health programs.

Help this good cause by buying and using these Christmas seals on your letters and packages.

The American Association for the Study of Goiter

Again offers the Van Meter Prize Award of $300 and two honorable mentions for the best essays on the subject of goiter provided they meet the standards of the award committee. The essays should be based on original research work on the subject of goiter, preferably its basic cause. The prize essay or its abridgement is to be presented at the annual meeting of the Association to be held in Salt Lake City, Utah, in June, 1935. Competing manuscripts should be in the hands of the Corresponding Secretary, W. Blair Mosser, M. D., Kane, Pa., not later than April 1, 1935.

The first prize of $300 for the 1934 meeting was awarded to M. A. B. Brazier, Ph. D., B. Sc., London, England, for her essay "The Impedance Angle Test for Thyrotoxicosis."

First honorable mention was awarded Prof. Ugo Cerletti, Genoa I,taly, for his essay "Three Years of Experimental Research in the Etiology of Endemic Goiter."

Second honorable mention was awarded D. Roy McCullagh, M. D., Cleveland Clinic, Cleveland, Ohio, for his essay "Studies in Blood Iodine using a New Chemical Method."

Dr. W. D. Haden,

Charlottesville, Va., has been elected one of the directors of the newly organized Charlottesville and Albemarle County Chamber of Commerce, for the current year.

Inter-State Postgraduate Medical Association of North America.

The Philadelphia Assembly, early in November, was considered one of the best ever held and had a large attendance. Dr. Charles H. Mayo, Rochester, Minn., succeeded to the presidency, and the following officers were elected: Presidents of Clinics, Dr. Edward W. Archibald, Montreal, Canada, and Dr. William J. Mayo, Rochester, Minn.; President-elect, Dr. David Riesman, Philadelphia; Managing Director, Dr. William B. Peck, Freeport, Ill.; secretary, Dr. Tom B. Throckmorton, Des Moines, Iowa; Treasurer and Director of Foundation Fund, Dr. Henry G. Langworthy, Dubuque, Iowa; Chairman of the Program Committee, Dr. George W. Crile, Cleveland, Ohio. The next meeting place has not yet been selected but will probably be one of the medical centers of the middle-west section of the United States.

The following doctors from Virginia were registered in attendance:

Dr. Walter P. Adams, Norfolk.
Dr. O. T. Amory, Newport News.
Dr. E. David Blechman, Newport News.
Dr. C. B. Bowyer, Stonega.
Dr. John O. Boyd, Roanoke.
Dr. P. W. Boyd, Winchester.
Dr. C. B. Courtney, Newport News.
Dr. Albert V. Crosby, Norfolk.
Dr. Hal Davis, Roanoke.
Dr. R. M. DeHart, Floyd.
Dr. G. G. Hankins, Newport News.
Dr. Robert Jones, Dorchester.
Dr. James King, Radford.
Dr. Charles H. Lupton, Norfolk.
Dr. Robert Mathews, Norfolk.
Dr. W. P. McDowell, Norfolk.
Dr. Joseph T. McKinney, Roanoke.
Dr. James A. Miller, Winchester.
Dr. Richard H. Nicholls, Norfolk.
Dr. Robert T. Peirce, Newport News.
Dr. Arthur W. Porter, Norfolk.
Dr. W. O. Porter, Roanoke.
Dr. W. L. Powell, Roanoke.
Dr. Charles W. Putney, Staunton.
Dr. J. Lewis Rawls, Suffolk.
Dr. J. W. Sayre, Hampton.
Dr. Charles W. Scott, Hampton.
Dr. B. C. Shuler, Shenandoah.
Dr. Alvah Stone, Roanoke.

Postgraduate Course Held for Colored Doctors.

Following its postgraduate course in Fractures for white doctors, which was held in October, the Surgical Staff of Duke Hospital, Durham, N. C., put on a similar one-day program for the colored doctors of that state. There were about 150 members of the colored Medical Association in attendance, with a large number of guests from Virginia. The attendance upon and interest in both courses was so gratifying, that it is planned to have similar courses next year, and these may be made annual affairs.

Dr. Edwin D. Vaughan,

Class of '33, Medical College of Virginia, has located at Ashland, Va., where he is engaged in general practice. Dr. Vaughan interned at the Northampton-Accomac Memorial Hospital, Nassawadox, and at the Johnston-Willis Hospital, Richmond.

Dr. Norman Patterson,

Class of '29, Medical College of Virginia, who has been engaged in medical work in China, under the auspices of the Presbyterian Mission Hospital, is on a furlough in this country and will take a course at the Postgraduate Medical School of Columbia University before returning to the Orient.

Married.

Dr. Paul Q. Daniel, Deltaville, Va., and Miss Salome Virginia Butler, Richmond, Va., November 1st. Dr. Daniel is a member of the class of '33, Medical College of Virginia, and has been practicing at Deltaville since last July.

Dr. Edgar Childrey, Jr., also of the class of '33, Medical College of Virginia, who later interned at Grant Hospital, Columbus, Ohio, and Miss Irene Hill, Piqua, Ohio, October 20th. Dr. Childrey is now at Rochester, Minn.

Dr. F. H. Smith,

Abingdon, Va., President of the Medical Society of Virginia, by invitation, addressed the South Piedmont Medical Society at its meeting in Lynchburg, Va., November 27th.

Assistant State Epidemiologist.

Dr. E. M. Holmes, Jr., has been appointed Assistant State Epidemiologist and entered upon the duties of his office November 1st. Dr. Holmes is an alumnus of Georgetown University, Washington, D. C., for both his academic and medical degrees, and served his internship at St. Vincent de Paul Hospital, Norfolk, Va. Since completion of his internship, last June, he has been in practice in Norfolk.

Dr. Austin I. Dodson,

Richmond, Va., was the invited guest of the Norfolk County Medical Society for its meeting on November 12th, at which time he read a paper on "Present Trend in the Treatment of Prostatic Obstruction."

The Southeastern Branch Society of the American Urological Association

Will be held at the Biltmore Hotel, Atlanta, Ga., December 7th and 8th. The program includes some of the best known physicians in America—men famous for their urological works. A subscription dinner will be held on the evening of the 7th, at 7:00 P. M. Reservations for room and dinner should be addressed to Dr. Earl Floyd, secretary, Biltmore Hotel, Atlanta, Ga.

Dr. John C. Neale, Jr.,

Of Hilton Village, Va., has been appointed Health Officer for Henrico County, Virginia, effective December 1st. He is a graduate of the Medical College of Virginia and has been in practice in Hilton Village for the past three years, and has also been acting as Health Officer for Warwick County. Dr. Neale succeeds Dr. Ernest L. Stebbins, who recently tendered his resignation from the Virginia State Health Department to accept a position with the Health Department of New York State.

Dr. T. Stanley Meade

Has opened offices at 913 Floyd Avenue, Richmond, where he will limit his practice to Pediatrics. He is a graduate of the University of Pennsylvania Medical School in 1930 and served a two-year rotating internship at the University of Pennsylvania Hospital. Dr. Meade also served an internship at the Children's Hospital of Philadelphia and was assistant resident at the Children's Hospital in Boston.

Dr. Russell B. Smiley

Has located at Salem, Va., where he will be associated with his brother, Dr. Jack Smiley, of the class of '27, Medical College of Virginia. Dr. R. B. Smiley, who graduated from the Medical College of Virginia in 1933, has been located in Maryland, for the past year, at a CCC camp.

Virginia Nurses Hold Institute.

The Educational Section of the Graduate Nurses' Association of Virginia held an Institute of Nursing Education at the Academy of Medicine, 12th and Clay Streets, Friday and Saturday, November 23rd and 24th. Instructors, superintendents of nurses, supervisors, head nurses and leaders in nursing education from all sections of Virginia were in attendance.

Miss Lulu K. Wolf, chairman of the section, presided at all sessions of the Institute.

The program was an exceedingly interesting one. Miss Isabel Maitland Stewart, Professor, Department of Nursing Education, Teacher's College, Columbia University, spoke at the first session on "Curriculum Revision as a Part of Educational Reconstruction." Her talk was a forceful and inspirational one in which she gave concrete evidence of the need for enriching the curriculum of the nursing school of today as based on the findings of the Committee on the Grading of Nursing Schools. Miss Ethel M. Smith, Secretary, Virginia State Board of Nurse Examiners followed Miss Stewart's talk with a most enlightening discussion of "Curriculum Revision in the Virginia Schools of Nursing."

Miss Stewart's subject at the second session was "The Social Sciences in the Nursing School Curriculum." Miss Charlotte Pfeiffer, President of the Virginia State Board of Nurse Examiners spoke on "Facilities Available for Instruction in the Social Sciences in the Virginia Schools of Nursing." Miss Pfeiffer illustrated her talk with a map of Virginia, showing localities equipped to give this type of experience to the student nurse.

The third session was a discussion of "The Importance of Introducing the Viewpoint of Public Health and Preventive Medicine in the Undergraduate Curriculum." Miss Purcelle Peck, Professor of Public Health Nursing, School of Social Work and Public Health, College of William and Mary, discussed this topic from the standpoint of "Classes in Public Health Subjects." Miss Virginia Elliman, Educational Director, Instructive Visiting Nurse Association, discussed the topic from the standpoint of "Student Affiliation with a Public Health Nursing Agency."

Each session was followed with a general discussion which proved most interesting in every case. All those who attended felt that it had been a most instructive and helpful experience.

Dr. Linwood D. Keyser,

Roanoke, Va., was the guest speaker at the meeting of the Section on Genito-Urinary Surgery of the New York Academy of Medicine on October 17th. He addressed the Section on the subject, "Urolithiasis: A Clinical and Experimental Study," presenting the results of his researches in this field during the past fifteen years.

He also read a paper before the District of Columbia Urological Society on November 26th, in which he reviewed the etiology of urinary stone and the present methods of treatment.

News Notes from Medical College of Virginia.

Dr. Frederick B. Mandeville, has been appointed full-time professor of roentgenology, and entered upon his new duties November 1st. Dr. Mandeville, a native of New York State, received his academic and medical education at the University of Pennsylvania. Following this training he was instructor in

the X-ray department at Yale University for two years. Since that time he has been chief roentgenologist at the Peralta Hospital, Oakland, Calif.

Dr. Daniel D. Talley, who has held this position since the death of Dr. A. L. Gray, will remain on the teaching staff. Due to his large private practice Dr. Talley was unable to devote full time to the work of this department which has grown very rapidly in the past few years.

Dr. William B. Porter, professor of medicine, and Dr. J. C. Forbes, associate professor of chemistry, attended the meeting of the Southern Medical Association in San Antonio, Texas, November 13th-17th. Dr. Forbes presented a paper on Chemistry of Vitamins. Dr. Porter is secretary of the medical section of the Association.

During the month of October the outpatient department of the college handled 2,671 patients, making 5,950 visits to the various clinics.

Founder's Day of the ninety-seventh session of the college will be observed on Monday, December 3rd, at twelve o'clock in Monumental Episcopal Church. Dr. S. C. Mitchell, professsor of history and political science at the University of Richmond will be the speaker on this occasion.

An operating room for experimental animal surgery has been equipped in the basement of the Egyptian Building. The facilities of this department are available to all members of the teaching surgical staff of the college.

The regular scientific monthly meeting of the faculty and staff of the college was held November 8th. Dr. Harry Walker gave a paper on Abdominal Pain in Diabetic Acidosis, Dr. James P. Baker on Anemias Dependent upon Food Deficiencies, and Dr. Harvey B. Haag on The Effect of Xanthine Derivatives upon Digitalis Activity.

Dr. Walter B. Cannon, professor of physiology, Harvard University, recently spoke to the students of the college.

Dr. Rolland J. Main has been named director of the Department of Physiology to fill the vacancy caused by the leave of absence of Dr. W. R. Bond, who is now director of Medical Research with the Pyridium Corporation.

News from the University of Virginia, Department of Medicine.

At the meeting of the University of Virginia Medical Society on October 8th, Dr. Oscar Swineford read a paper on Physical Allergy; Dr. Albert E. Casey spoke on Experimental Alteration of Malignancy.

Dr. Maximilian Ehrenstein, lecturer in Pharmacological Chemistry at the University of Berlin, has accepted a Fellowship in Physiology at the University of Virginia for the current session. Dr. Ehrenstein will engage in investigations of the suprarenal gland.

The Gibbs Prize for 1934, of the value of $750.00, has been awarded to Dr. Alfred Chanutin, professor of biochemistry. This prize is limited to research on kidney disease and is awarded by a Board of Trustees of the New York Academy of Medicine.

At the meeting of the University Medical Society on October 22nd, the following program was given: Dr. Bruce Morton, Two Cases of Parathyroidism—Results of operative removal of adenoma of the parathyroid gland with hypersecretion of parathormone; Dr. James E. Kindred, Reactions of blood cells of hemopoietic tissues to dyes.

Dr. Albert E. Casey, formerly an associate in the Department of Pathology at the Rockefeller Institute of Medical Research, has joined the Staff of the Department of Pathology as Associate Professor.

On November 5th, Dr. E. P. Lehman presented a paper on Ureteroarachnoid Anastomosis before the University Medical Society; Dr. C. C. Speidel showed motion pictures illustrating Nerve Injury and Recovery in the Frog Tadpole.

New York Polyclinic Medical School and Hospital.

The following program was presented at the Clinical Society Meeting of the New York Polyclinic Medical School and Hospital on November 5, 1934:

1. Amoebic Dysentery. Damaso de Rivas, M. D., University of Pennsylvania.

2. The Use of Artificial Pneumothorax in the treatment of Lobar Pneumonia. Francis G. Blake, M. D., Yale University.

3. Medico-zoological aspects of the race problem. Colonel C. W. Stiles, U. S. Army, Washington, D. C.

Dr. Murray B. Gordon, Adjunct Professor of Pediatrics, is giving a series of six lectures on Endocrinology in Children, on Tuesdays at 3:30 P. M., having started November 13, 1934.

Nobel Prize Award.

Drs. George R. Minot and William P. Murphy, of the Harvard Medical School, and Dr. George H. Whipple, of the University of Rochester, Rochester, N. Y., have been awarded jointly the Nobel prize in medicine for 1934, in recognition of their work for "liver therapy in anemia."

A Postgraduate Course in Ophthalmology and Otolaryngology

Is to be held at the University of Virginia, December 5th-8th. This series of lectures and clinics is sponsored by the University of Virginia, at the request of the Virginia Society of Otolaryngology and Ophthalmology. All lectures and clinics are to be held in the amphitheater and operating rooms of the University of Virginia Medical School and Hospital. In order to defray the expenses of the meeting there will be a fee of $25.00 for the entire course or $15.00 for either part of it. There will be an informal dinner for members and guests at the Farmington Country Club on the evening of the 7th.

Those giving lectures or holding clinics in this course are Dr. E. Ross Faulkner, Dr. John R. Page, Mr. E. B. Burchell, Dr. Bernard Samuels, Dr. John H. Dunnington, Dr. Conrad Berens, and Dr. John M. Wheeler, all of New York; Dr. George M. Coates, Philadelphia, and Dr. Vincent W. Archer, Dr. Fletcher D. Woodward, Dr. Oscar Swineford, Dr. H. S. Hedges, and Dr. Edwin Burton, of the University of Virginia.

Scientific Exhibit at A. M. A. Meeting.

Application blanks are now available for space in the Scientific Exhibit at the Altantic City Session of the American Medical Association, June 10-14, 1935. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient. Applications close February 25, 1935.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Ill.

An Excellent Xmas Gift.

At this season, when Xmas thoughts are paramount, we wish to suggest the three volumes on History of Medicine in Virginia as excellent gifts for those interested in books. These are books whose value increases with age, and they would be an addition to any library. They may be had as single volumes or as a set, orders to be placed for Xmas delivery through the printer or the office of the Medical Society of Virginia, 1200 East Clay Street, Richmond.

Graduate Course in Ophthalmology and Otolaryngology.

The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., announces that its ninth annual Spring Graduate Course will be given at the hospital from April 15 to 20, 1935. Information in regard to the course may be obtained from the Hospital.

Dr. D. Hunter Marrow,

Boydton, Va., has left for Florida and will spend the winter months at Daytona Beach as has been his custom for a number of years.

Dr. Beverley R. Tucker,

Richmond, Va., was recently the guest speaker before the Woman's Club of Hopewell, Va., his subject being "Adolescent Conduct Disturbances."

Cinchophen and Amidopyrine.

The Federal Food and Drug Administration has issued warnings against these two drugs. Cinchophen causes a degeneration of the liver cells and amidopyrine may cause a reduction in the number of white blood cells. Several manufacturers declare on their labels the presence of these drugs in their medicines, but others do not. It is not compulsory to declare these but if a physician is in doubt he may consult the druggist or write to the Food and Drug Administration in Washington and ask for facts.

American College of Surgeons.

At the Clinical Congress of the College, held in

Boston, the middle of October, only two Virginia doctors appeared on the program. In the symposium on Cancer is Curable, Dr. Hugh H. Trout, of Roanoke reported some cured cases, and Dr. J. Shelton Horsley, of Richmond, took part in the symposium on The Treatment of Cancer by presenting a paper on "Standard Methods of Treatment of Cancer of the Stomach by Surgery." All papers and clinics were of a high order.

At this meeting Dr. Robert B. Greenough, of Boston, was installed as president; Dr. Donald C. Balfour, Rochester, Minn., was chosen president-elect; and Drs. Arthur W. Allen, Boston, and John A. Gunn, Winnipeg, Canada, were named vice-presidents.

New Books in Library.

Some of the latest additions to the Library, Medical College of Virginia, Richmond, are listed below. These are available to members of the Medical Society of Virginia, the only charge being return postage.

Ayers, C.—Huxley.
Bergey—Manual of Determinate Bacteriology.
Booth, M.—Woman and Society.
Carlson, A. J.—Studies on the Possible Intoxicating Action of 3.2 per cent Beer.
Dorsey, G. A.—Hows and Whys of Human Behavior.
Edwards, L. F.—Anatomy for Physical Education.
Goodsell—Problems of the Family.
Gregory, W. K.—Man's Place Among the Anthropoids.
Haberlnig, W.—German Medicine.
Haggard, H. W.—Doctor in History.
Hansen—Review of Nursing.
Hewitt, L. F.—Oxidation-reduction potentials in Bacteriology and Biochemistry. 2nd ed.
Hill, H. W.—New Hygiene.
Hornibrook, Mrs. E. A.—Stand Up and Slim Down.
Huxley, J. S. and de Beer, G. R.—Elements of Experimental Embryology.
Jastrow, J.—Piloting Your Life.
Joly, J. S.—Stone and Calculous Disease of the Urinary Organs.
Keith, A.—Human Embryology and Morphology.
Macleod, J. M. H.—Diseases of the Skin.
Marrack, J. R.—Chemistry of Antigens and Antibodies. (Med. Res. Council, Spec. Rep. Ser. No. 194).
Martin, F. H.—Fifty Years of Medicine and Surgery.
Medicine in Its Chemical Aspects, Volume II.
Mennell, J. B.—Physical Treatment by Movement, Manipulation and Massage.
Memo. 180—On the Bedbug and How to Deal With It.
Miller, I. E.—Psychology of Thinking.
Morrill—Hospital Manual of Operation.
Morris, C.—Man and His Ancestor.
National Institute for the Deaf—All about the Deaf.
Nordlund, U.—Uber die sog. primare, etc.
Norton, W. J.—Cooperative Movement in Social Work.
Parsons, T. R.—Materials of Life.
Penrose, L.—Influence of Heredity on Disease.
Report of the Departmental Committee on Sterilization.
Reports on Public Health and Medical Subjects—
No. 72—Report on the Bedbug.
No. 73—Antimony in Enamelled Hollow-Ware.
Rosenau, M. J.—Preventive Medicine and Hygiene.
Sheffel—Jurisprudence for Nurses.
Sherman, T.—Dissecting Aneurysms.
Smith, S. C.—That Heart of Yours.
Tanner, F. W.—Food-Borne Infections and Intoxications. Microbiology of Foods.
Technical Papers—Action of Water on Lead.
Transactions of the American Neurological Association, 1933.
Voorhees, I. W.—Hygiene of the Voice.
Wells, H. G.—Autobiography.
Westermarck, E.—Memories of My Life.

For Sale—

Equipment of doctor recently deceased. May be seen in the Surgical Show Rooms at 308 North 12th Street (between Broad and Marshall), Richmond, Va. (*Adv.*)

For Sale—

Office (4 rooms), instruments and library of doctor in town of twenty-five hundred inhabitants. Good surrounding country and good roads. Retiring from practice on account of age. Address No. 458, care this journal. (*Adv.*)

Obituary Record

Dr. John Dunn,

Prominent physician of Richmond, Va., died at his home in this city, November 7th, following an illness of several years. He had been a member of the Medical Society of Virginia for forty-five years. Dr. Dunn at one time served as Editor of the Department of Eye, Ear, Nose and Throat of the *Virginia Medical Semi-Monthly.*

The following resolutions, which give the life of Dr. Dunn in detail, were adopted by the Richmond Academy of Medicine, at its meeting on November 13th:

Dr. John Dunn was born on November 4, 1862, in Petersburg, Va., and was the son of an old and prominent Virginia family. As a youth he attended McCabe's School in Petersburg. Later he entered the University

of Virginia, where he was a student in both the academic and professional courses. He won the Master of Arts degree at the University in 1884, and the Doctor of Medicine degree in 1886.

After serving a year as Interne in one of the New York hospitals, he went abroad for a period of post-graduate study and was a student in Berlin, Paris, and London. Having completed what for those days was an unusually extensive preliminary training, he located in Richmond and opened his offices for the practice of his profession, limiting his work to diseases of the eye, ear, nose and throat.

Dr. Dunn's personality and professional ability soon built up for him a large private practice, his patients coming not only from Richmond and Virginia, but from all parts of the country. Despite the heavy demands on his time and strength, he always gave several hours each day to the charity work of the dispensaries and hospitals of the city. His manner was sometimes curt and abrupt in dealing with rich neurasthenics, but it was always kind, patient and sympathetic with the poor and destitute. With them he not only spared no time or effort in personally carrying out the details of treatment, but when conditions demanded special nursing, expensive medication or prolonged hospitalization, he paid the cost out of his own purse and no one except by accident knew of his generosity.

Dr. Dunn was a hard student and prolific writer. He possessed an intimate knowledge of the anatomy and function of the brain and he knew more about cerebral localization than many who make a specialty of neurology. His good judgment and unusual diagnostic ability were widely recognized by his fellow physicians.

When the University College of Medicine was founded, in 1893, Dr. Dunn was one of the original faculty. He also served as Treasurer of the Corporation and it was largely due to his prudence and foresight that the College weathered its early financial difficulties. No one who attended the faculty meetings of that day will ever forget his terse pessimistic speeches which gave place to an attitude of general optimism when the economics he advocated were finally adopted.

Dr. Dunn was active both as teacher and executive officer during the twenty years of the existence of the University College of Medicine, and, when the school was merged with the Medical College of Virginia in 1913, he became a member of the new faculty. He held the professorship until 1923, when he was forced to resign it because of impaired health. Thus it will be seen he was a teacher in the two medical schools of Richmond all told for a period of thirty years.

Dr. Dunn indulged in few social pleasures. Except for the tragic death of his son and only child, which occurred in a military training camp in Canada shortly before America entered the great War, his family life was a very happy one.

He was a prominent member and liberal contributor to the Episcopal Church and accepted its creed and doctrines without reservations. He was very fond of reading, and his mind was enriched with a knowledge of the best in literature. He was a lover of Nature and of the Great-out-of-doors. He took long walks in the country and always brought back a leaf or fern or flower. He made a very complete collection of orchids, which he presented to the University of Virginia. He was very fond of shooting and during his last illness his eyes would always glisten with pleasure when he looked at a pair of ducks or a bunch of birds sent him by some fellow sportsman.

In the death of Dr. Dunn, which occurred at his home in this city, on the afternoon of Wednesday, November seventh, nineteen thirty-four, the Richmond Academy of Medicine lost one of its oldest, one of its most distinguished and one of its best loved members. Therefore, be it

RESOLVED, First: The Richmond Academy of Medicine desires to record its admiration and appreciation of the high personal character and worthy professional achievements of the late Dr. John Dunn.

RESOLVED, Second: The Academy also desires to extend the profound sympathy of its members to the family and friends of Dr. Dunn in their great bereavement.

STUART MCGUIRE,
JOS. A. WHITE,
W. WALLACE GILL.

Dr. Benjamin May Baker,

Widely-known and beloved physician of Norfolk, Va., died November 16th, after a short illness. He was sixty-nine years of age, and, although a native of Petersburg, Va., had resided in Norfolk since infancy. Dr. Baker graduated from the College of Physicians and Surgeons, New York, in 1889. He had practiced in Norfolk since his graduation and is said to have "numbered his friends by the thousands in all walks of life in the city." He was a member of the Staff of the Protestant Hospital. Dr. Baker had been a member of the Medical Society of Virginia for forty-five years. His wife and three children survive him.

Dr. Charles Everett Carter Peyton,

The first resident physician of Pulaski, Va., died October 30th, following an operation in a Roanoke hospital. He was a native of Charlottesville, Va., and was eighty years of age. Dr. Peyton graduated from the former New York University Medical College in 1876. He had practiced in Pulaski for fifty-five years and was for many years surgeon for the N. & W. Railroad. Dr. Peyton was a Mason and had been a member of the Medical Society of Virginia for forty-three years. He is survived by two daughters.

Dr. John Randolph Garrett,

Roanoke, Va., died August 28th. He was sixty-five years of age and a graduate of the former University College of Medicine, Richmond, in 1898. Dr. Garrett was a member of the Staff of the Roanoke Hospital. He had been a member of the Medical Society of Virginia since 1900, and was also a member of the American Academy of Ophthalmology and Otolaryngology and a Fellow of the American College of Surgeons.

Resolutions on Dr. Drewry.

The President of the Petersburg Medical Faculty on October 20, 1934, appointed a Committee to express appropriate tribute of respect to the memory of Dr. William Francis Drewry, who for many years was a member of this body. The following resolutions were later adopted:

WHEREAS, It has pleased Almighty God to remove our friend and colleague, Doctor Drewry; now, therefore, be it

RESOLVED (First), That the Petersburg Medical Faculty received the announcement of his death, which occurred in Richmond, Virginia, on October 19, 1934, with sentiments of deep and sincere regret; and,

RESOLVED (Second), That in the knowledge of his profession, in his classical attainments, in the general range of his information, his friendly associations and long service to his native state will render the loss a vacancy in our ranks; and,

RESOLVED (Third), That we offer our sympathies to his family, who lament his loss, and unite our regrets with those who have loved and admired him; and,

RESOLVED (Fourth), That these resolutions be spread on the minutes of the Faculty, and that a copy be sent to the family, to the VIRGINIA MEDICAL MONTHLY, and be published in the local newspaper.

J. B. JONES,
E. L. MCGILL,
L. S. EARLY,
W. M. BOWMAN.

The following memorial on the death of Dr. Drewry was adopted by the Board of Trustees of the Richmond Academy of Medicine:

Dr. W. F. Drewry was well known to practically all the members of the Richmond Academy of Medicine, although he had become a member of this body in the latter years of his life, in consequence of his change of residence from Petersburg to Richmond. Yet his eminence in the profession of medicine and his prominence as a citizen had long ago caused him to become one of the leaders in the civic life of the Commonwealth.

It is scarcely possible to think of an activity affecting the life of the people of the state for the past generation in which his counsel was not sought and in which his helpfulness was not freely given. Although the first years of his medical life were intramuralized as an assistant physician in what was at that time a small asylum for the care of the insane, the scope of his thought reached far beyond the walls of the institution. His entrance into the practice of medicine was coincident with the renaissance in the science and the art of that profession, and the care of the mental patient was at last being wrested from the medieval attitude of society to that affliction. Only in the latter half of the last century were well-defined attempts inaugurated to enable physicians and society to think of mental abnormality as mental sickness. Prior to 1900, certainly in the South, the activities of all physicians that had to do with the treatment of mental disease were confined to work within the insane asylums. The public, including the majority of physicians, could know little of what was taking place within those walls, and in consequence there could be little intelligent and helpful interest in psychiatric problems. A few worthy predecessors in the work had preceded Dr. Drewry, but he was the first, perhaps, to conceive of mental abnormality as incapacity to make and to sustain social adjustment, and as being of state-wide, rather than merely individual, in its involvement and consequences. By patient resourceful, unwearied and unceasing effort, Dr. Drewry became an apostle to the insane, and a missionary sent out by his own medical conscience to the people of the state and of the nation, informing first, and pleading afterwards, in behalf of those sick in mind and distraught in spirit.

But he was much more than a psychiatrist—a physician concerned about mental disease; he was much more than an efficient hospital executive; he was a well equilibrated and judicious crusader, bent not upon destruction and coercive proselyting, but upon illuminating and informing and educating. He was amongst the first to teach the people to think of disorder of the mind as a manifestation of sickness. In consequence of such instruction and encouragement the people became able to speak of such an affliction in the home without the feeling of embarrassment and of disgrace. And in that difficult effort he succeeded. Wherever he went throughout his long professional life he carried the torch that caused the shadows to flee away, and to leave behind light and knowledge where there had been superstition and dread. But his interest was not delimited to the sick mind. In all of its operations he was vitally concerned. His strength was turned always against all those forces that thwarted and handicapped the individual in living the free and useful and happy life. He was greatly concerned about education; he assisted in the organized fight against tuberculosis; he gave of his time and skill to prisoners in jails and in the penitentiary; in his last years he organized in the State's Department of Public Welfare the Bureau of Mental Hygiene. His activating work will lend continuing inspiration to all these causes, and his unselfish devotion will cause his name to be remembered in gratitude.

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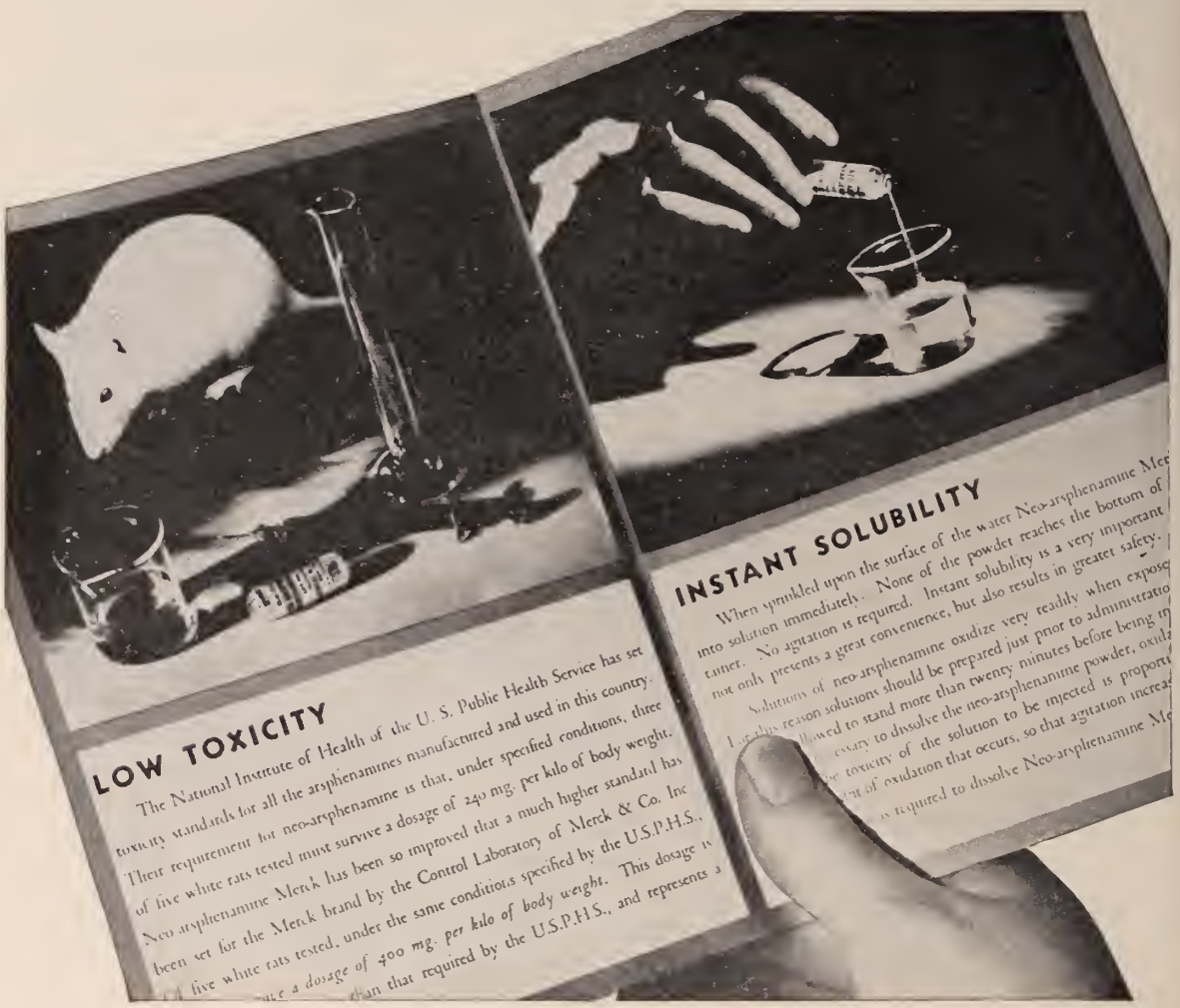
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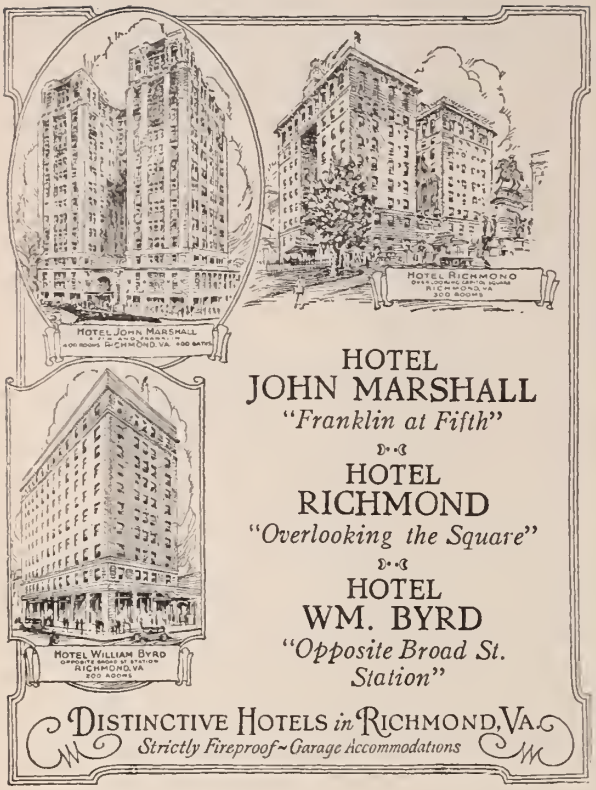
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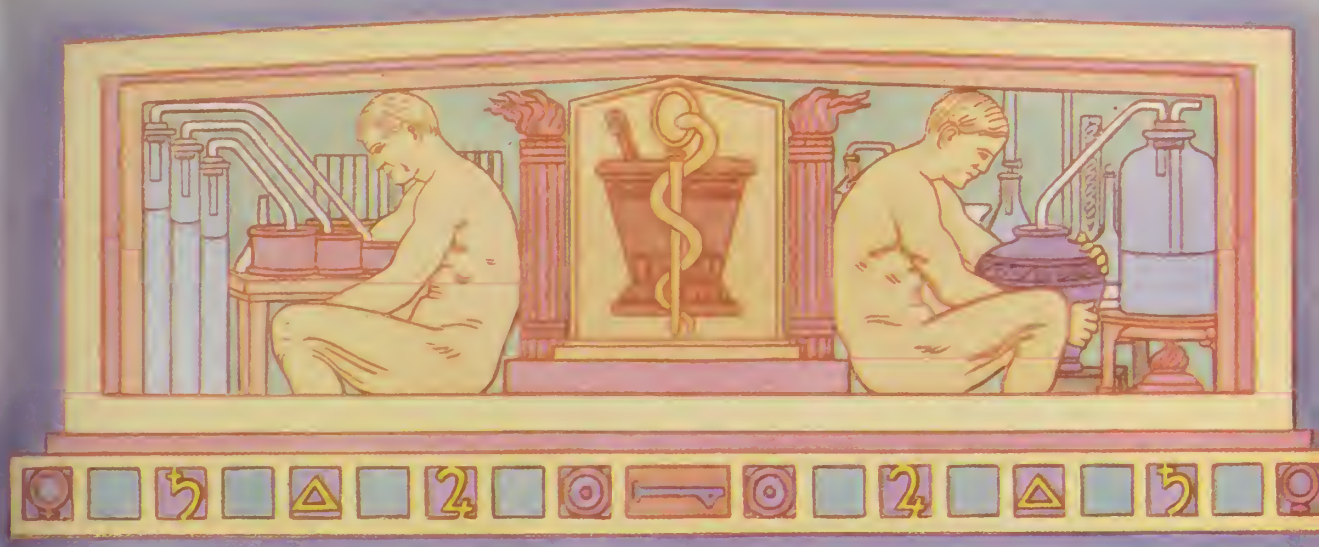


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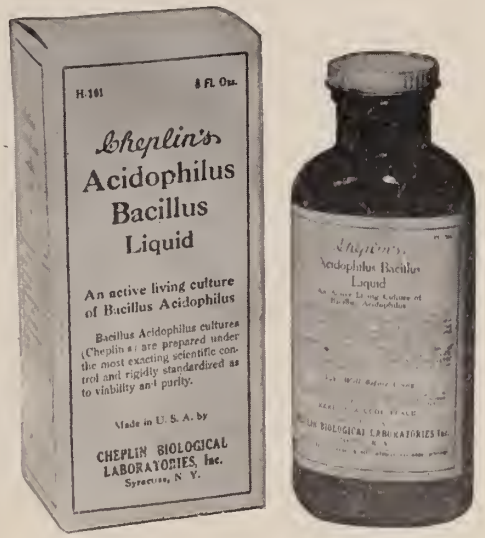
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SYMPOSIUM ON MEDICAL ECONOMICS

MEDICAL EDUCATION, SPECIALIZATION, AND THE PRIVATE PRACTITIONER.*

J. C. Flippin, M. D.,
University, Va.

Medical Education

I have a feeling akin to conviction that in a symposium on Medical Economics at this particular time something is going to be said sooner or later about state medicine, so at the very outset I take occasion to express my satisfaction that my task here is a simple one in that the relationship between medical education and the State is long established and universally accepted. Passing over centuries of European history in which formal medical education was almost exclusively a function of state universities, in Virginia that great individualist, the author of the Declaration of Independence, in planning a state university included medicine as one of the original group of subjects to be taught. Medical practice, however, may well be a horse of another color.

This first third of the twentieth century has witnessed unparalleled changes in medical education. There are doubtless men in this audience who received the doctor's degree after one or two years of residence in the medical school, and this could be done without preliminary college training. Today the minimum period in college and medical school is six years, to which period should be added one to five years in hospital training before entering upon practice. Of course, the reason for this has been the truly enormous strides medical science has made during this time and in the period immediately preceding.

The changes in length and character of medical training have brought economic questions and difficulties of first importance. Today the financing of the medical department of a university is one of the major problems of its executive officers. With the possible exception of the graduate school, the medical school is the greatest burden upon the resources of an institution of higher learning.

Available statistics indicate that the average cost of maintaining a medical school is something more than $700 per student a session. This varies widely, as in some schools the cost per student is more than $3,000 a session. The average fee paid in by the student is about $250 a year. The 23,000 students in schools of the United States are being educated at an annual cost of more than $9,000,000 in excess of the fees charged these students. This is being borne by state appropriation and private endowment. It is proper to say, however, that these figures include funds used for research activities, a highly necessary function of a medical school and in the case of some institutions adding materially to the budget. It may be well asked if this enormous increase in the cost of medical education is necessary or justified, or is it part and parcel of an era of profligate spending culminating in 1929. In certain instances it may be true that institutions have burdened themselves with buildings, equipment and personnel out of keeping with reasonable requirements, but on the whole the expenditure is entirely justified and quite necessary.

When the history of our generation is written I believe a noteworthy feature will be the unparalleled record of philanthropic gifts and the establishment of foundations for the betterment of mankind. Medical education has been particularly favored in these and without this source of support could not have made the notable progress we have witnessed. No

*Read as part of the Symposium on Medical Economics at the sixty-fifth annual meeting of the Medical Society of Virginia, in Alexandria, October 9-11, 1934.

figures are at hand to indicate the total amount of these benefactions, but it is a matter of record that one division of a single foundation contributed more than $75,000,000 to medical education during the past fifteen years. In general, states have shown a relatively liberal attitude toward medical education. This has been variable, however, and certain state schools have been hard put to it to keep pace with the endowed institutions or with state schools which have been more liberally dealt with. In Virginia we have reason to be grateful to individuals and foundations for substantial but on the whole modest assistance. Our appropriations from the State for either capital outlay or maintenance have been far below those of many states. In consequence, the going has been hard for our schools and it has been difficult for them to keep their places in the upward march of medical education and maintain the traditions of thoroughness and scholarly effort we like to think has marked our past.

We are acquainted with the fact that we have in the United States a higher percentage of physicians to population than any country in the world and this percentage is now increasing year by year. There are being turned out from the schools each year about 5,000 medical graduates, which is appreciably more than the number required to replace vacancies by death or retirement. It may be fairly asked what those charged with medical education have done about this in the past and what is being done now. Twenty-five years ago when the population of the country was about 25,000,000 less than at present, the number of students in the medical schools was somewhat larger than today.

Through concerted action of the Council on Medical Education of the American Medical Association, the Association of American Medical Colleges and State Examining Boards, schools without adequate facilities were forced to close their doors and proper entrance requirements were prescribed and enforced. The immediate effect of these measures was to greatly reduce the number of students. In 1923 the number of graduates was 3,000. This number has gradually risen to 5,000 a year, at which it has apparently become stabilized. The colleges of arts and sciences are now turning out far more students with pre-medical training than the medical schools can or will take. Last year there were some 12,000 applicants for admission to the first-year class in medicine in the United States and Canada. Of these 7,500 were accepted and 4,500 refused. Thus we see much has been and is being done to restrain the rising tide, but the flow is still somewhat too large for easy assimilation.

In addressing this Society last year I discussed the possible disadvantages of further raising entrance requirements or of increasing the cost of medical education as measures for limiting the number of medical students. The other alternative would be an agreement by medical schools to arbitrarily further limit the number of students admitted. One of the practical difficulties of such a plan is that reduction in numbers would bring serious financial problems to schools without endowment or without adequate state support, as such schools are largely dependent upon tuition fees of students. Whereas with few exceptions it costs the school more to educate a student than he pays in, if the enrollment is reduced it does not materially influence the cost of operation but reduces the income. More generous support from state or other source would place these schools in an independent position. This problem confronts our Virginia schools in a very practical way and the help of the profession is needed in solving it.

The Specialist

The problem of specialism is one that has been very thoroughly discussed in many quarters and I feel that I can add very little to what has become common knowledge. Specialism is an important and necessary feature of modern medical service. Statistics indicate that at the present time about 40 per cent of medical graduates limit their practice exclusively to a specialty within five years after graduation. Most fields of clinical specialism are already over-crowded and the present trend will unquestionably make matters worse. The American Medical Association, cooperating with organizations representing the several fields of specialism, is attempting to standarize the training for men going into the restricted fields of practice. It is proposed that at a date not later than January 1, 1938, specialists will not receive recognition by these bodies who have not had after graduation at least one year of general internship followed by three years of intensive training in graduate school and hospital.

The Practitioner

I have been asked to say something about the problems of the general practitioner. We may well

ask at the outset what these problems are, if any. At our last meeting one of our members, Dr. Daniel, read a thoughtful and suggestive paper on the present state of general practice. He concluded the present day practitioner "has so ignobly fallen from his high estate and is wallowing in the slough of despond of lack of confidence of the public, lack of confidence in himself and of financial dependency. And * * * * * bids fair to become a dodo, defined in the crossword puzzle as an extinct animal." Such statements as this are sufficiently common nowadays to indicate that some such feeling must be more or less prevalent among practitioners. They feel they no longer hold the high position once occupied by the family physician in public confidence and in public esteem. While I think Dr. Daniel overstated his case and while many practitioners have developed something of an inferiority complex and are not seeing things in their true perspective, the statement quoted contains more than a germ of truth.

Now comparing ourselves among ourselves and judging ourselves by ourselves we may not always be wise. For the moment let us examine the situation from a somewhat detached viewpoint. Does a similar situation exist in other branches of medical practice? How goes it with the other so-called learned professions? Have any of us ever seen the time when there was less respect for the law or greater criticism of bar or bench? Does any class bemoan the loss of leadership and prestige more bitterly than the clergy? They can't even control the votes any longer. Do patients go from one specialist to another? Surely they do if the first specialist doesn't get all of their money. Do our patients go to osteopaths, chiropractors and other cultists? Some of mine do. But was there ever a time in recorded history when some of the people were not eager to follow false gods? Certainly they have done so since the Golden Calf was raised up in the wilderness. As I see it, a good deal of the change the general practitioner bemoans and in a way resents is not peculiar to himself or because of himself, but is due to a change in the psychological outlook of the public to many things.

The family physician reached the pinnacle of his high estate at a time when it was still possible for a gifted and well-trained man to compass in the main the field of clinical medicine. I think we must concede that this is no longer possible and that the practitioner of the future will not be cast in exactly the same mold as his predecessor. Will he be replaced entirely by the specialist, or, if he survives, will he become merely a subservient figure in medical practice?

I have seen no plan outlined nor have I been able to visualize a system of medical practice which hasn't as an important if not its most important feature a service which in general represents the function now being performed by what we call for a better name the general practitioner. If the practitioner of the future is to be different from the family physician of the past, in what respect will he differ? Prophecy is hazardous and perhaps no one can answer this question in an entirely satisfactory manner. However, it seems to me the picture is already unfolding itself to an extent that we may in a measure predict the trend. At present and for some years past well-trained medical graduates who have established themselves in practice in the cities have not attempted to cover the whole field of clinical medicine. Some of them do no surgery, others do no obstetrics and in other ways limit the field of their activities. On the other hand they are likely to give special attention to and interest themselves in some one field. This may be pediatrics, gynecology, surgery or the diseases of the heart and lungs. They do not declare themselves specialists in these fields and continue to do what is generally understood as being general practice. The ideally trained man is first of all a capable diagnostician and is furthermore well prepared to treat the vast majority of patients he sees in the home or in his office. He has no elaborately equipped laboratory, but carries in his bag a few instruments of precision with which he is familiar and is well acquainted with both the possibilities and limitations of laboratory examination. When he makes a diagnosis of acute intestinal obstruction and does not himself do surgery he refers such a case to a surgeon with the knowledge that his early diagnosis has been the most difficult part of the job. Because the patient has passed out of his hands he does not consider himself merely a "sign post" nor does he develop an inferiority complex because the surgeon will receive $100 to $200 for the operation, whereas his fee will be perhaps $10 to $20. Without elaborating the picture, it is my observation that in modified form this is taking place in the town and in some instances in the village. The estab-

lishment of privately owned or community hospitals throughout the country permits in increasing degree this type of cooperation and division of labor.

So-called group practice is a variant of this system. The extent to which group practice, in the sense of actual partnerships, will be developed is an open question, but I doubt if it will in the immediate future cover any considerable portion of medical service. On the other hand, a system of free cooperation and interdependence of men not all precisely the same pattern is applicable to both urban and rural districts with the exception of the most isolated localities. I am not forecasting or advocating a system of medical service in which all practitioners are to be half-baked specialists, but directing attention to a trend in medical practice which seemingly enables practitioners to avoid the impossible task of covering the entire field. The highly-trained specialist will always have his place, but I believe a larger percentage of medical service can be adequately done by men doing general practice to the financial advantage of both practitioner and public. In its more highly-developed form this system is dependent both upon the early and later training of the practitioner and particularly upon the willingness of physicians to voluntarily cooperate with each other. I can but believe that medical practice must develop along this or similar lines, or the hand of organized society will be laid upon it and we may be forced into a situation foreign to our present opinions.

Unless we adopt some system of controlled economics or of collectivism, thereby sacrificing to a greater or less extent our individualistic concepts, I see no direct way of equalizing the income of physicians. The local attorney doing general legal work at the county seat does not have the income of the lawyer specializing in corporation law and representing large financial interests in the metropolis and probably never will. From information I have been able to gather during the recent and present depression the general practitioner has suffered less curtailment of income than the specialist. Many of the latter have seen days when they would gladly have exchanged a set of nicely equipped offices, nurse and secretary for just a fairly good general practice. The general practitioner of today has been caught, as it were, in an era of unprecedented scientific expansion and development, one most difficult to follow, and is serving a public critically minded toward all established customs and institutions.

Nothing is further from my mind or heart than to offer unfriendly criticism or to fail to bear testimony to the fidelity and skill with which he has carried on under these trying conditions. I prefer to believe that our adjustments can be and will be best made by evolution rather than by revolution. If the operation is too radical the patient may die, but we also know the same result may ensue if there is no treatment at all.

Many of you may have heard the scholarly and thoughtful Billings lecture on the Practitioner of the Future, delivered at the recent meeting of the American Medical Association by Dr. James B. Herrick. Covered by the cloak of this eminent physician, I dare quote a couplet used by him as my closing thought and it may be after all the most profitable and practical one for us to ponder:

> The fault, dear Brutus, is not in our stars
> But in ourselves, that we are underlings.

INSURANCE, HOSPITAL AND SICKNESS.*

WALTER B. MARTIN, M. D.,
Norfolk, Va.

The principle of insurance as a means of averaging the financial hazards of life and death is familiar to us all. Through sickness insurance it is proposed to apply this principle in equalizing the cost of medical care. It is urged that, while the aggregate cost of medical care for the American people is not excessive, the distribution of this cost is so unequal that the burden on many individuals is insupportable. It is further argued that, as a result of this "economic barrier" which has arisen between those who are equipped to dispense medical service and those who need this service, a large fraction of

*Read as part of the Symposium on Medical Economics at the sixty-fifth annual meeting of the Medical Society of Virginia, in Alexandria, October 9-11, 1934.

the population does not receive adequate medical care.

In theory, sickness insurance is appealingly simple. Under this plan medical cost would be spread over large groups and over periods of time. Medical service, stabilized by a fixed income, would be dispensed by well-organized groups equipped to render all the varied types of service that are necessary. However, in attempting to formulate a practical plan of sickness insurance, many difficulties and objections are encountered. Time does not permit a detailed examination of the facts and figures that are available in support of or in opposition to such a plan. We can only hope to consider certain general factors involved in the situation.

It should be emphasized in the beginning that the only standard by which we should measure the merits or demerits of a certain system is the quantity and quality of the medical service it can render the people of our country in proportion to the cost and the effect it may have on the science of medicine. A rational approach to the subject would involve a careful comparison of all of the factors that enter into medical care. We should be concerned, not only with those tangible things that make up the trappings of medicine, but the less easily definable concepts that have to do with the actual relief of human woe.

The practice of medicine is a very personal matter. A physician treats not only a certain disease, but the individual with the disease. All influences that affect unfavorably the personal relationship of patient and physician are as harmful in their result as are defects in technical training and mechanical equipment.

The Committee on the Cost of Medical Care has collected much valuable data on the distribution and cost of medical care. It defines adequate medical care in such terms as the number of office visits, hospitalized cases, hospital days, and the average cost per annum. Little is said of those personal relationships that have so much to do with adequate medical service. A critical analysis of its figure discloses some rather interesting things. Time is insufficient for more than a casual reference to a few examples.

The total annual medical cost to the American people is placed at $3,656,000,000. Of this amount, $485,000,000 is spent for patent medicine and the services of cultists. There is no more reason for including these two items in the cost of medical care than there is in making tobacco and soft drinks a part of an adequate dietary. Furthermore, expenditure for these two items would not be materially changed no matter what system of practice is followed. It is stated that 50 per cent of the total cost of medical care is expended by the group of seriously ill that requires hospital care. This group comprises less than 10 per cent of the whole. The remaining 90 per cent, therefore, after these deductions are made, expends a total of $1,343,000,000, or an average of approximately $11.50 per person per year. This is quite a different figure from their average of $30.00 per annum and more significant of actual conditions. In Publication No. 26, it is shown that 9.8 per cent of our people are sick and receive no medical care. However, when one notes that nearly 30 per cent of the illnesses in this group were classified as minor respiratory diseases, these figures lose much of their significance. This is further emphasized when one examines their definition of sickness. An illness is definite as "any disorder which wholly or in part disables an individual for one or more days," or as "any experience for which medical service of any kind is received" and "any condition, symptom or disorder for which drugs costing fifty cents or more are purchased." These examples are mentioned merely to point out the inadequacy of the background of fact from which proceeds the movement designed to change entirely our system of practice. These figures are still further distorted when presented to the lay public. A prominent advocate of socialized medicine in an article in a recent magazine states that nearly 40 per cent of the people of the United States go through the year without any attention from a physician, dentist, oculist, or hospital. He failed to mention how many of these individuals needed medical care or who applied for it and were refused.

Sickness insurance may take one of two forms, namely, voluntary or compulsory. The advocates of voluntary sickness insurance propose the formation of groups that will agree on an average annual fee and in return are to be provided with a standard medical service. In Europe mutual associations providing medical service have existed since the Middle Ages. In this country forms of voluntary insurance go back to its foundation. In recent years there has been a marked extension of this idea. The Majority Report of the Committee on the Cost of

Medical Care makes this plan one of its major recommendations. It has reported in Publications 17-21 on certain of these groups that have functioned well, but it failed to make any general survey of the field and has omitted from its reports analyses of the many organizations of the type that are open to valid criticism.

It seems probable that under certain conditions homogeneous groups can be set up in various parts of the country that will meet special local needs, but any general application of this principle does not seem possible. Commercial promoters have already entered the field. Destructive competition has arisen between rival groups. Medical service is being bought on a salary basis and retailed as an article of commerce. The effect of such a set-up on the quality of medical service and on the economic status of the physician is in the end bound to be destructive.

The most cogent objection to voluntary insurance as a social contribution lies in the fact that it offers no possibility of solving the medical difficulties of the low income group. In order to reach this group the rates would have to be so low as to make impossible the development of adequate medical service. If rates are at a level consistent with proper service, the members of this group would not or could not make the required payments.

The experience of all countries that have tried voluntary insurance on a large scale is that it is a failure as a general social measure, and all of these countries have gone over to some form of compulsory insurance.

Compulsory sickness insurance is now in effect in most of the European countries except Russia. It was introduced in Germany more than fifty years ago. It is worthy of comment that the various systems have undergone repeated modification since their inception and have not yet become static. The search for an ideal system still persists and probably will persist for many years to come.

It is impossible today to analyze in detail the results obtained under the various systems in vogue. I can only point out certain general trends and effects that are to be noted in all of them.

Much of the difficulty that has arisen has been due to the combination of sick benefit and medical service. This has resulted in an impossible situation due to the conflict between the duties of the medical attendant as a physician and as an agent of the company. The insured's attitude toward the physician is one of suspicion rather than of confidence and trust. In such an atmosphere adequate medical care is impossible. If cash benefit and medical service are entirely separated, there still remain very potent difficulties. The most important one is the attitude of the insured.

In small mutual associations a feeling of responsibility exists among the members toward each other. They realize that the success of the project and, in fact, their own welfare depend upon each member acting honestly in the matter of claiming service. In a large organization with members distributed over a wide area, or in a system operated by state or national government, this sense of responsibility is lost. The members are prone to feel that they are entitled to service in return for the money that they have paid in and to claim benefit for trivial or imaginary ills. That this is no theoretical conception is shown by the enormous rise in the morbidity rate in insurance countries, and the marked increase in the average number of sick days per patient. The insurance physician is placed in an embarrassing position between the demands of economy on the part of the organization he serves and the insistence of the insured for treatment. Probably the worst feature of such a situation is the inevitable result that will follow in the deterioration in the quality of medical service rendered those who are actually sick. The physician's attitude toward the patient undergoes a change. Beset by many individuals with minor and unimportant conditions, he is apt to treat indifferently those who actually need his care. Particularly is this true in seeking out the early manifestations of disease.

There is sound reason for believing that compulsory sickness insurance is socially wrong on account of the destructive effect on the character of those insured. A similar effect has been noted in this country in the veteran hospitals. Anyone who has had experience in these hospitals has been depressed by the vast number of neurotics and malingerers that crowd out those that actually need care. This objection can be partly met by giving only partial coverage and by requiring each individual to make at least a small payment for the service he receives. A further provision eliminating from insurance benefits all minor illnesses and those of short duration would further meet this difficulty.

The actual problem of relief from burdensome

medical cost concerns only a small fraction of those who suffer illness. The 10 per cent that are sick enough to require hospital service incurs about 50 per cent of the entire cost of medical care. It is this group that needs relief and our efforts should be directed to this end. In this connection it is of value to remember that the low income group now receives 77 per cent as much hospital care as is received by the group with incomes of $10,000 and over. Of those having incomes under $10,000, the low income group receives the highest amount of hospital care. Hospital insurance provides a means of equalizing the burden on the 10 per cent that requires hospital service. Under the safeguards laid down by the American Hospital Association, it would seem to provide a practical approach to the problem. Hospital service as contrasted to individual medical care is a definite commodity capable of being standardized. The actual cost of hospital service can be determined and its component parts examined. When the insured buys hospital service through an insurance plan, he knows exactly what he is getting and the hospital knows exactly what it contracts to furnish. Here, again, we will encounter the same problem of misuse of the service. In addition to the other safeguards, it would seem wise to require the insured to pay a small portion of the cost. Even here a sense of individual responsibility must be cultivated.

Finally, I should like to contrast the present method of paying for medical service and the one proposed in the so-called "American" plan of required insurance. "Our "sliding scale" operates in such a way that the wealthy pay a considerable part of the cost of the care of the poor. Fees are scaled down to the disappearing point for the benefit of the low-income group. The indigent are cared for partly out of tax funds and partly by the medical profession without remuneration. The proponents of the insurance plan have borrowed our sliding scale, but it does not slide very far upward. They propose to include in insurance groups every one with income up to $3,000-$5,000. They frankly state that those in the upper brackets will have to pay a higher rate in order to carry those of low income. The whole cost, except for 20 per cent that they hope to secure by taxation, will come from individuals with incomes of less than five thousand. Except for the fraction raised by taxation, the massed wealth of this country will escape payment of any share of the burden. I am somewhat amazed at the temerity of those that advocate this proposed plan of required insurance. They would not only change completely the status of an ancient profession, of whose traditions and ideals they know very little, but they would place upon the shoulders of those of only moderate means the expense of supporting their plan.

CONCLUSIONS

Voluntary sickness insurance on a general scale does not offer an effective solution of the problem of medical care for the low-income group. Under special conditions and in certain localities it may be adapted to local needs.

Compulsory sickness insurance, after many years of trial in various European countries, has not yet developed into a satisfactory system of providing adequate medical care for the low-income group. There is no evidence to show that a more effective system can be developed in this country.

Hospital sickness insurance, under proper safeguards, seems to provide a means of distributing the cost load for the group that incurs the greatest expense for medical care.

339 Boush Street.

FEDERAL, STATE, COUNTY AND MUNICIPAL RELATIONS TO MEDICINE AND CARE OF THE INDIGENT SICK.*

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This phase of the discussion from the subject assigned should consist of the consideration of the relationship which I believe exists in most instances, and should exist in all instances, between the official public health agencies and the medical profession. With the changing sociological and eco-

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nomic conditions, there is unquestionably greater need for public health to be considered as a specialty in the practice of medicine. The functions of public health agencies are the prevention of disease, the control of spread of disease and the conservation and preservation of the health of the people as a whole—national, state and local. In our form of government, public health organization has been developed to include Federal, state and local, or community, health service. The Federal Public Health Service has been organized and developed in such manner that its functions in no way interfere with the state and local health services. In addition to performing specified governmental functions, it acts as a coordinating body, and makes available information nationally for the protection of the health of the people, and renders assistance to the state and local health agencies. Because of divided responsibility for public health among several departments of the Federal Government, confusion has resulted at times. There should be a coordination of activities, and the responsibility for Federal public health work vested alone in the Public Health Service.

In Virginia every effort has been made to keep public health within the bounds of recognized governmental functions. Public health is preventive, while the practice of medicine is both preventive and curative, yet there is no point in which private medicine and public health cannot go forward without divergence of thought and opinion, and through combined efforts render more and better medical service to all concerned. There are many phases of public health activity which are suitable for cooperative effort between the physicians and the public health agencies. However, there are certain underlying principles that should govern and always be observed. It should always be borne in mind that very few communities are alike, and many factors must be taken into consideration in planning and developing and carrying out any program of work. If the practicing physician is familiar with the procedures to be instituted for the protection of the health of the people, misunderstandings will be eliminated. The practicing physician has not only an essential part in preventive medicine, which is, of course, a means of safeguarding the health of the people, but he is the main factor in accomplishing results. The physicians should not only assist but take the leading part in determining any method for instituting, preventing and controlling disease, and all of those engaged in preventive medical work should endeavor to increase the community's confidence in the medical profession.

To the practicing physician rendering service to the individual, it should be the aim of health departments to make available every facility that effects the spread of disease. By law the responsibility for the prevention of spread of disease is an obligation placed upon health departments. It is required that every available means be instituted to discharge this responsibility. It is recognized that supervision of water supplies and sewage disposal, information pertaining to vital statistics, and collection of reports on communicable diseases, and the institution of methods against the spread of disease, are functions that can only be performed by a governmental agency. Other activities directly for the benefit of the practicing physician are diagnostic service, epidemiological investigations and laboratory examinations. Public health laboratory examinations are not made simply as diagnostic measures but are made in order to aid in the control of disease in the community.

Active immunization is the most important measure in the control of several communicable diseases, particularly diphtheria. The question has often been raised as to the part health departments should play in immunizing against disease. The Virginia State Department of Health stands on the principle that immunization of the individual is a responsibility of the practicing physician, and we can rest assured that if the practicing physician will undertake to do the immunization work, the department of health will be glad to be relieved of this responsibility. However, immunization procedures are so definitely a means of preventing the spread of certain diseases, that any health officer would be derelict in his duty if he did not use these methods as well as every known procedure to accomplish results. Even in view of this, no immunization procedures that involve mass protection through immunization are carried out in any community in Virginia until the local physicans are consulted and are given every opportunity to perform this preventive work. Official public health agencies in Virginia stand ready to cooperate and assist the medical profession in every way possible to protect the citizens against such diseases as smallpox, diphtheria and typhoid fever.

Medical conferences and the so-called clinics conducted by the health department are educational alone, and should be used for this means alone in educating and bringing to the attention of the public the value and need for medical service. Through demand of the citizens and physicians, tuberculosis diagnostic clinics have been recognized as a public health function. In a word, these clinics are conducted in an effort to discover cases of tuberculosis and to prevent and control the spread of this disease as well as to provide especially trained consultants for the medical profession. Suspected cases are only examined at these clinics on request of the family physician, and after examination are referred, whether positive or negative, to the family physician for advice, treatment and care.

Conferences in maternity and infancy work are also purely educational in character. All expectant mothers and infants contacted by public health workers are immediately referred to the medical practitioner for advice and treatment. This is an important factor in reducing excessive maternal and infancy mortality rates.

Economically, health supervision of children is demanded. In Virginia a number of agencies participate in this work. It is not alone carried on by official agencies but there is active participation by the medical profession. Educational measures should result in placing children in the hands of physicians for correction of physical defects and the institution of hygienic measures for improvement in health. The relationship between these agencies should not entail the actual correction of defects nor the instituting of hygienic measures by public health services. Increased knowledge of the public relative to medical facts and information available as to the possibility of preventive as well as curative medicine indicate very clearly that the physician must become the advisor to his patients on preventive and hygienic measures.

Changes in economic conditions of the country during the past several years have presented new and perplexing problems to the medical profession. It can be said without misstatement of facts that additional burdens have been placed upon the medical profession in the care of the indigent sick. The care of the indigent sick may not be a function of the government but it is a responsibility—whether national, state or local. Provision is made in the Statutes of Virginia for the care of the indigent sick by the local communities. Even in normal times medical care for the indigent has not always been provided by the governing bodies. It has usually only been available through the efforts of the practicing physician who, through his self-sacrificing and humanitarian service, cared for those unfortunates to his own detriment and loss.

The physician has carved a niche for himself in the records of civilization which can never be erased. Unquestionably he will continue to perform his duty to humanity as far as he is able to do so, but we cannot question the fact that it is impossible for the medical profession to assume responsibility for the care of the indigent sick without just compensation for their services. Plans for the care of the indigent sick, both in hospitals and in their own homes, have either been worked out or are under consideration, but it is not believed that the question has been fully answered as yet. The medical profession must take the lead in working out with the governmental agencies the responsibility for providing this care in some manner which will be satisfactory to the medical profession, to the citizens, and to the patients.

A satisfactory solution of this problem requires the development of a cooperative plan between the medical profession and the official agencies, preserving the relationship of the physician to the patient, in addition to permitting the patient to select the physician of his choice to render the medical care necessary. There should never be any need for a change in the relationship between the physician and patient. From the standpoint of self-protection, the indigent sick must be aided, and, unless this is done, they will inevitably become a menace and a continuing burden on the entire community in which they live.

In conclusion, let me reiterate that the care of the indigent sick must not continue to be a burden on the practicing physician but a responsibility of the local communities as a whole. The physician recognized the need for the control of epidemic diseases and developed public health work. The medical profession again must take the lead in working out a plan that will not only provide adequate care for these people but one that will also provide fair compensation for the physician.

State Office Building.

THE ECONOMICS OF MEDICAL CARE.*

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The invitation you gave me to take part in this symposium was received with more than ordinary pleasure. Not only do I deeply appreciate the honor of being a guest of a society of such distinguished traditions and achievements but, if you will forgive a personal digression at the outset, I feel as if I have come home again. My own people came to the Virginia colony to seek the opportunity for religious, political and economic freedom; my forebears have lived and died within her boundaries; my own under-graduate education was received in the rigid yet liberal curricula of her colleges and universities; my earliest endeavors as a citizen were in the movement for popular education in 1902-1905, and in discussions of public affairs as a writer and as an editor of a daily paper in Virginia. I feel at home also because I am in a group of physicians. For, though I have no medical degree, I have had the great privilege of working intimately for the last twenty years with members of your profession in medical research, in the field of public health, and on the economic and social aspects of medicine and public health. I say all this, in spite of its personal nature, because I want you, many of whom are my former schoolmates, to know that I am not quite the wild-eyed sort of radical that some have made me appear. Here, at least, I feel at home because I am by heritage, tradition, training, and conviction, an individualist; because I have had the opportunity to understand something, I think, of the ideals and the every-day problems of medical practice; because in this old Dominion unique progress already has been made by all concerned, both medical and non-medical, in discharging common responsibilities for the public health; and because we can speak the same language in discussing a problem of grave public as well as private interest.

With a confessed philosophy of individualism, I come as a student of medical care in its public aspects—not as a protagonist of any scheme or doctrine—to lay before you some tentative proposals for your consideration. The approach which I and my associates are making to the study of economic problems in medical care is concerned with the essentially economic problem of the wider distribution of medical care to the general population through better budgeting of the costs and more stable and adequate compensation for those who render medical care. Our study has not been directly concerned with the quality of medical practice or with the content of medicine, except insofar as these may be affected by a solution of the economic problems. Our approach is also pragmatic in that it starts by taking into consideration the existing economic system, the existing organization of medical practice, and the already established methods of public health and public medical service in the United States. It has tried to draw lessons from European experience studied from the viewpoint of American conditions and needs. It strives to take into full account the traditions, prejudices, and trends in our own country. Its objective is to find something that will offer a workable solution to economic problems but which, at the same time, will satisfy the following postulate which, it seems to me, is thoroughly sound:

Medical care is necessary for the maintenance of the health of the people and should be available to all who need it.

A proper corollary is that any system of medical practice must be judged by the extent to which good medical care is actually obtained. If we apply this criterion of public needs to present-day medical practice, we find that there are about enough doctors, nurses, and others engaged in rendering medical services—about a million persons all told—to take care of all illness and to do nearly all the preventive work for individual patients that we now know how to do. In an ordinary year before the depression became acute, there was being spent annually by the American people about three and two-thirds billion dollars for doctors, dentists, hospitals, nurses, medicines, and all sorts of medical services, good and indifferent. This is enough money to pur-

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chase reasonably adequate medical care at current average prices. Yet in a year's time, even in a prosperous era, millions of families cannot afford to obtain any medical care; hundreds of thousands of cases of sickness needing medical attention are unattended; four persons in every five obtain no dental care; less than 7 per cent of the population have even a partial physical examination, and less than 5 per cent are immunized against some diseases. Although medical science is still far from having solved all the mysteries of ill health, only some of the knowledge already gained is applied to all the people who need medical care.

Medical practice is not profitable to all who are engaged in it because millions of those who need the service cannot pay for it and because of the high cost of maintaining many competitive enterprises. Such facts as are available show that in 1929, one-third of all physicians had net incomes of less than $3,000 and one-half less than $3,800. If we grade physicians in income intervals of $1,000, more general practitioners would be found in the $1,000-$2,000 class than in any other. And this was in the halcyon days! Even in 1929, for every physician who earned a net income of more than $10,000, there were two who earned less than 2,500; for every dentist who earned more than $10,000, there were four who earned less than $2,500! The obvious conclusion is that the doctors were not getting rich in our best times. Their financial rewards are in general only one-half or two-thirds now what they were then. That is putting it far too mildly, however. When we consider the investment in the doctor's training and his responsibility, the conclusion is inescapable that large proportions of medical practitioners have not been and are not being adequately remunerated.

Such a situation, with insufficient health service for the people and inadequate financial support of the practitioners and hospitals, is not satisfactory from the point of view of the public health. Let us be frank. Although we are accustomed to boast of achievements in medicine and public health as having lowered mortality among infants, children, and younger adults, the death rate among adults of middle and old age has not appreciably diminished in the past fifty years. By reason of restrictions upon immigration and the decline in the birth rate, we are becoming an older-aged people and can no longer afford to accept impaired vitality as we have done in the past. Even the mortality among mothers and infants in a large class of the population of the United States is still far above that in some other countries. The incidence of illness from preventable and curable causes among persons of every age is still disconcertingly great. The prevalence in all classes of preventable and remediable defects and impairments, physical and mental, is shockingly high. Signs are accumulating that the American people are not going scot-free from damages to health in this depression. Increased mortality rates, especially from tuberculosis and among infants, and more malnutrition among school children are already appearing in some areas and in some groups of the population. Recent inquiries are revealing not only a higher sickness rate among the poor as compared with those more favorably situated, but also a higher rate among those who have suffered the most marked economic change during the past three or four years. These differences in mortality, morbidity, and impairments are definitely correlated with the extent to which preventive and curative medicine is obtained or provided.

The needs of the situation cannot be met, it seems to me, by any one method. There is no panacea, no single remedy. Those who compose our well-to-do class can continue to purchase the medical care to which they are accustomed and the physicians who serve them can continue to do so. Those who are too poor to pay for medical care must be *given* medical care. The only important changes in the present situation of charity practice should be the more adequate provision of good medical care for these people and the more satisfactory payment of physicians and others for rendering medical care to this unfortunate class. For strictly public health and community services and for the most expensive services—the treatment of those afflicted with mental diseases, tuberculosis, cancer, orthopedic defects, the impairments resulting from poliomyelitis and the like—the public must assume an increasing responsibility. This is unavoidable where medical service requires community action or where personnel or equipment are so elaborate and so costly as to be beyond the means or command of individual practitioners. For this class we have public medicine now and we must have more of it. Thus, in brief, I would dispose in principle of the well-to-do and the very poor and of those medical needs which are met and must be met by community action.

But for the great majority of people who earn their livelihood in the American way of living and who want to pay for medical care, there still remains a fundamental problem which is not solved by any of these means. Medical costs are so variable and so uncertain that they cannot be budgeted by individuals except by those who have substantial incomes or larger means. The facts in the case are clear and incontrovertible on this point. This is the essence of the economic problem in medicine. Between fifty and one hundred million people in the United States cannot, even in the best of times, pay for the medical care they need, and not because the average or total costs are too high, but because the individual costs are uncertain and cannot be budgeted. For the great bulk of the population and for the great bulk of individual medical service in ordinary cases of illness, and for ordinary types of individual preventive care, we must devise and apply some practical means of making possible budgeting and payment of medical costs.

It is significant that all efforts to find such means are based upon the principle of *distributing costs* either among numbers of a group or over a period of time or both. Many physicians employ sliding scales of charges in order that the rich may aid in paying for charity practice. Commercial organization for the sale of medical services is being tried in some sections of the United States; this is highly —and, I may add, properly—distasteful to the medical profession. State medicine, by which is meant the public employment of all physicians and others engaged in rendering medical care, is not only repugnant to the profession but, I believe, would be equally repugnant to the great majority of people. The fact that certain types of medical services have been assumed by the public in this country because they are too expensive for individual provision or because they have for their primary purpose the community control of infectious diseases, does not, I think, give us any warrant for concluding that state medicine or complete public medical service is a feasible solution for the bulk of medical practice and medical service. Various voluntary schemes to distribute costs among groups of people are being tried in the United States. Agencies are being created for the payment of medical bills on the installment plan; group hospitalization or insurance of hospital costs is finding increasing favor in many communities; industrial establishments, either with or without the contribution of employees, are providing medical care to the workers and in some instances to their families as well; some commercial insurance companies are already considering the provision of medical care as one of the benefits of group sickness insurance. In a few places, county medical societies have organized service bureaus to adjust the medical fees charged to worthy poor. And in the Pacific Northwest there has been an important development of medical service bureaus which apply the principle of insurance to medical care provided under the auspices of the medical society. All of these various schemes have been submitted to rather careful study by the Committee on the Costs of Medical Care and by other organizations and agencies. A dispassionate analysis of the results of such studies leads to the conclusion that the heart of the economic problem, so far as the great bulk of the population is concerned, has not been successfully attacked by any of these measures.

Quite naturally and inevitably, any study of the question leads one to consider carefully what other countries have done. The predominant fact emerges that in practically every European country and in Great Britain and Japan, some form of what is called "sickness" or "health insurance" has been adopted. The term "health insurance," for some strange reason, excites some people to unreasoning fury. The bare mention of it promptly leads to a discussion, not of its merits as a method of distributing the costs of medical care among a population group and of providing for payment to physicians, but as a possible attribute of a doubtful social philosophy. Yet when we view the matter calmly, we find that in an extremely individualistic country such as Great Britain or Denmark, health insurance has worked to the satisfaction not only of the public but of the medical profession. Recently I was discussing the attitude of the medical profession toward health insurance in Great Britain with Dr. Anderson, the Secretary of the British Medical Association, and I asked whether the English physicians would, as we have been led to believe by some writers in this country, be willing to return to the old system which prevailed before 1911. Dr. Anderson replied—and he gave me permission to quote him—that not one in a hundred English physicians would be willing to give it up. In spite of certain defects in administrative procedures or in

respect to some other details, a similar situation prevails in other countries.

The bogey of "state medicine" or "socialized medicine" which arises in the minds of some when health insurance is mentioned, is due, I think, to a misunderstanding of the relation of medical practitioners to health insurance. Health insurance is not a system of medical practice. It is a system of paying the costs of sickness through budgeting and prepayment. It is always and everywhere consistent with the private practice of medicine. Indeed, so far as medical practitioners are concerned, health insurance as actually practiced in European countries and in the United States is almost the antithesis to "state medicine" because it is a system of accumulating a financial pool from which to remunerate private practitioners. In modern systems like that of Great Britain, professional matters are under professional control, all licensed practitioners have the privilege of being insurance practitioners or not, as they choose, and the method of remuneration (salary, fee, or per-capita payment) is a choice left to the professions. The 18,000 physicians engaged in British insurance practice are not employed by a government agency; they are private practitioners who have chosen to engage in insurance practice while also carrying on their other private practice among non-insured persons. They and the British Medical Association have repeatedly endorsed health insurance and have recorded their considered opinion that the scope of the system should be enlarged in respect to both the insured population and the medical benefits. Neither in Great Britain nor in any other insurance country has any responsible group, public or professional, ever seriously proposed the abandonment of health insurance. In the course of our studies it has seemed entirely proper to consider carefully the experience of foreign countries with health insurance. We have been trying to discover whether insurance as a method of distributing costs, almost universally used against unpredictable risks other than illness, could be applied to illness under American conditions. Time does not permit a detailed review of this experience but as a result of these studies, I would like to put before you certain tentative conclusions:

The experience of Great Britain and of other countries showed that if a health insurance system:

(a) Excludes profit agencies or other intermediaries between the doctor and his patient;

(b) Leaves to the professions the control of professional personnel and problems and responsibility for the quality of medical service;

(c) Permits all competent practitioners who subscribe to necessary rules of procedure to engage in insurance practice;

(d) Permits each insured person to choose his own physician or dentist from among all practitioners who engage in insurance practice;

(e) Permits insurance practitioners to accept or reject patients; and

(f) Leaves to the practitioners freedom to choose the procedure of remuneration

—if a health insurance system accepts these principles—it can work as clearly in the interests of the profession as of the public.

In planning any program for any state or for the nation, it is taken for granted that the constructive principles formulated by the International Professional Association of Physicians, the American Medical Association, the American College of Surgeons, by the California, the Michigan, and other State Medical Societies, and by other professional associations, should be given the most serious attention, for the maintenance of the physician's professional freedom is of cardinal importance. Adequate remuneration of all those who render medical service is necessary and the professional administration of professional personnel and activities, the maintenance of the private relationship between physician and patient, and the patient's free choice of physician are obviously essential. The certification of disability in order to obtain cash benefits to compensate for loss of wages resulting from illness should not be a responsibility of the practicing physician. We come to this conclusion because the combination of cash with service benefits throws upon the medical practitioner a dual function (provision of medical service and certification of disability) which interferes with the effective and economical practice of medicine and leads to devastating friction between the public and the professions, or between the professions and the insurance authorities. No proprietary or profit-making agencies should be included and no independent intermediary should be permitted between the potential patient and the physician.

Our studies lead to the suggestion, however, that

if and when health insurance is undertaken in the United States, it should go beyond the health insurance systems of Great Britain and Europe. Such systems provide a limited amount of medical care to low-scale wage-earners only, and are grossly inadequate from the viewpoints of medical practice and of public health. Granting that the indigent and dependent fraction of the population must be furnished medical care by the public, some of these systems (as in Great Britain) make no provision for the dependents of insured persons or for the great bulk of the population which is otherwise self-supporting but which cannot purchase adequate medical care on a pay-as-you-go basis, or for those in the "white collar" class. Medical benefits furnished under such poor-man's systems, limited as they are by the inadequate financial resources of the poor, obviously cannot be adequate in quality or sufficient in volume or variety, and cannot furnish a decent income to the practitioner or the institution. It is proposed, therefore, as it is now being proposed by the medical profession in England, that the family rather than the individual or the employed person should be the unit, and that the income limit of the insured population should be sufficiently high so that the system should embrace those who most need its benefits and so that there will be sufficient funds to pay medical practitioners fair remuneration for their services.

Medical benefits should be far more comprehensive than those provided under some European systems. It is proper to consider the possibility that they should include:

1. The services of the general practitioner and the provision of drugs and medicines which he prescribes;
2. The specialist, on the recommendation of the general practitioner;
3. General and special hospital care, with appropriate limitations of kind and facilities and durations;
4. Laboratory or clinic care for the ambulatory sick, on the recommendation of the physician;
5. Emergency and prophylatic dentistry, and such additional dental services as can be furnished for a specified sum;
6. Graduate or practical nursing in the home, with appropriate limitations on duration;
7. Special nursing in the hospital, when prescribed on grounds of medical need;
8. Prescribed medical commodities, home remedies, eye-glasses, surgical appliances, etc.

How comprehensively medical benefits can be provided in one community or another obviously depends upon the financial means of the insured population and upon the availability of adequate facilities.

It has been suggested that the medical services or benefits might be classified into two groups, as follows:

(a) Basic services, including those of the general practitioner of medicine, prescribed drugs and medicine, and, where sufficient beds are available, general and special hospital care; these might be regarded as "mandatory" services under a health insurance system;

(b) All other services could be placed in a "permissive" class and their provision made dependent upon considerations of ability to pay and availability of facilities.

I cannot, in the time at my disposal, attempt to outline even for discussion a plan or program of health insurance, compensation for medical costs, or by whatever name one chooses to designate a practical method of distributing the costs of medical care among those who are able to pay but who cannot budget against the unpredictable incidence of illness. I can only summarize what seem to me, after as dispassionate study as I am able to make, to be some of the underlying principles which must be taken into account. They are as follows:

1. Provision of good health service and medical care to all persons in the population.
2. Distribution of the costs over groups of people and over periods of time.
3. Adequate remuneration of those who furnish medical care.
4. Flexibility in the scope of medical benefits so as to permit adaptation to local variations in available personnel and facilities.
5. Exclusion of proprietary or profit-making agencies.
6. Professional control of professional personnel and procedures.
7. Coordination with other health, medical or welfare activities of the community.
8. Provision for an adequate program of public education on the need and opportunity for medical care.
9. Freedom of all competent practitioners who

subscribe to necessary rules of procedure to engage in insurance practice.

10. Freedom of all persons to choose their physician or dentist from among all practitioners in the community who engage in insurance practice.

11. Freedom of insurance practitioners to accept or reject patients.

12. Maintenance of the private practice of medicine for all, and freedom to purchase medical service privately by those who prefer and can afford this system.

I would like to close with a plea for frank and full cooperation among all who are involved as well as among those who are considering remedial measures. Such action as may be taken should not be forced by the vociferous insistence of a minority group but should come as the carefully considered result of all who have a proper interest in the matter. Although the public's interest is the most important, it will not be best served unless the professions which render medical service to the public cooperate fully in formulating a practical health insurance system, and unless the interests of hospitals, clinics, and other institutions, and the rights and obligations of those who are to contribute, whether they be employees or employers, are fully taken into account.

40 Wall Street.

DISCUSSION OF PAPERS BY DRS. FLIPPIN, MARTIN, RIGGIN AND SYDENSTRICKER

DR. W. L. POWELL, Roanoke: In opening a discussion on four papers, it is necessary to comment rather briefly on the contents of each.

Dr. Flippin's masterful paper needs very little discussion. I am sure we all agree with him as to the qualifications of the general practitioner of the future, one who will be more competent and who will not necessarily refer so many things to specialists. I feel that the general practitioner has done himself great harm in not going more thoroughly into the condition of the patients who have presented themselves to him and in referring them, somewhat hastily, to specialists. Then, of course, patients themselves select their own specialists and usually select the wrong one.

Dr. Flippin has referred to the fact that there are two thousand physicians being produced every year in excess of the number needed. With those, in addition to the thirty thousand now in excess, it is difficult to see what the future will bring forth. I can not think of any practical solution, unless the medical schools will agree to reduce the number admitted, or let two or more medical schools combine into one. The other alternative is to persuade us older men to retire sooner or die off a little bit earlier.

Tuberculosis diagnostic clinics and other clinics, which are held for educational purposes, are certainly to be commended, provided (and I think the practice has been adopted now), the patients are referred back to their private physicians. There was some criticism last year, and probably the year before, about the State Health Department entering into competition with the private physician, but I think most of that has been eliminated at the present time.

Dr. Martin, in his paper, brought out what he considers charges that have been made improperly to the cost of medical care, which, if deducted, will bring the cost from $30 a year, estimated by majority report, to $11.50 a year. I think that is very enlightening. I am sure he investigated the subject very carefully.

As for insurancee, you know there are two plans that have been tried out; one for sickness insurance, and the other for hospital insurance. The sickness insurance plan, as I understand it, has been tried on the Pacific Coast. A great many were initiated by commercial organizations and, as I understand, were very unsatisfactory.

The Fulton County Medical Society, which includes Atlanta, initiated a plan, I think in April, by which the low-income group could secure medical care at their homes. The low-income group were defined as those that make $75 a month, with no dependents, to those who make $150 a month, with up to four dependents. There is an initiation fee and monthly dues. These are in diminishing ratio according to the number in the family. There is no provision in this plan for doing away with the nuisance calls, which will likely give trouble. In a personal communication, about the fifteenth of September, from Dr. Gaines, of the Fulton County Medical Society, he said they had only two hundred members so far. They will have to have two or three thousand to make it successful.

The hospital insurance plan was initiated at Baylor University, Texas. Certain employed groups of men pay a certain amount per month, for which they are entitled to receive a $5-a-day room and all the facilities of the hospital for twenty-one days; special treatments, including electrotherapy, vaccines, transfusions, etc., being charged for at one-half of the regular rate. That is for hospital service only. They have recently added to that what they call a family plan, by which any one who was an original member of the employed group can pay a dollar per month additional, which will entitle the members of his family to the privileges of the hospital at fifty per cent reduction for room charges and other facilities.

Of course we all have the bugaboo of state medicine and national medicine. Every community that wants to institute any plan of insurance—either hospital or sick-

ness—should adopt one suitable to that particular community. When there are several hospitals in a city they should go into it on an equal basis, without competition. There should always be free choice of physicians and hospitals. And any plan adopted should be under the supervision of the local Medical Society.

DR. J. SHELTON HORSLEY, Richmond: I think we are all beginning to realize that times are changing and that, whether we like it or not, the attitude of the medical profession must adjust itself to the changing times. To say that the economic affairs of the medical profession should be conducted in the same manner as it was thirty or forty years ago is obviously unwise, to make an understatement. Change may not be progress, but to be frightened by the bugaboo of state medicine and adhere blindly to old, conservative measures, without making any study of present conditions or any attempt to adjust ourselves to them, must result in disaster.

One of the things doctors are suffering from is the same old law of supply and demand. That can hardly be gainsaid. When you have more doctors than are necessary to take care of sick people, and, in addition to that, the medical schools are actually turning out graduates at the rate of one to two thousand a year more than are needed, what can you expect? Obviously, the number of medical students should be reduced. We should exercise more careful selection, restrict those entering the profession to those with a sincere interest in medicine or with a longing to relieve misery and help sick folks.

There is a change of sentiment. Doctors are now beginning to discuss the economic situation more on its merits and to believe that there must be some solution to be worked out chiefly by the doctors themselves. What we need now more than ever before is real leaders in the medical profession. As Dr. Wilbur has said, it is better to have these economic adjustments done by the doctors than to the doctors.

Here is a recent Bulletin of the St. Louis Medical Society, which was bitterly opposed to the majority report of the Committee on the Costs of Medical Care. I should like to read an extract from it:

"It behooves us to listen closely to the rumblings that come from the thundering herd—the tremendous force of public opinion as reflected in newspaper and magazine editorials." (I will read one of the clippings quoted).

"The New Republic, October 3, 1934. 'President Roosevelt's Cabinet Committee on Economic Security is soon to make its report. When Mr. Roosevelt discussed this subject publicly, on June 29, health insurance was mentioned as one of the legitimate forms of state protection for the individual; but since then nothing has been heard of this subject. We hope this does not mean that the powerful forces which in America are fighting socialized medicine have succeeded, even temporarily, in sidetracking the question. As most persons now know, some nineteen other countries consider maintaining the health of all their citizens a legitimate subject for state concern. The list includes every country in the world with any reasonable claim to call itself civilized, except our own. In the United States the cost of illness has been carefully estimated at $10,000,000,000 a year, a loss of which a great part could easily be avoided. At present, nearly one-half the people with family incomes of less than $2,000 get no medical attention whatever—and this group includes a majority of the whole population. Sponsors for health insurance in America point out that it would not be necessary for us to copy slavishly the experience of Europe. There is no reason, for instance, why a plan should not be set up in the United States under which the personal relationship between physician and patient would be preserved, and any individual be left free to choose the doctor of his own preference. Certainly the President's committee will not have done its whole duty unless it gives the most careful consideration to this subject.'"

If we are to help our patients, which is, of course, the prime object of medicine, and save ourselves, which is a close second, we must in some way envision a plan by which the cost of medical care will be more equitably distributed to those in the lower income brackets, so that medical care can be obtained by those who need it.

Another thing we must have is the annual examination and a sharp lookout for early symptoms. Let us go back to Sir James Mackenzie, who emphasized the beginnings of disease—the trivial symptoms. One hundred and twenty thousand die every year from cancer, and the majority of those persons could be cured if the diagnosis could be made early. Eighty per cent of all cases of cancer can probably be cured early by excision or by application of X-ray or radium, or a combination of these remedies. Many other diseases, such as heart disease, can be avoided to a large extent. This thing of extending more medical service at cheaper rate to more people is a great problem, and it is one that we ourselves should solve.

The fact that there are more cases of sickness reported when there is insurance should be taken in two ways. It may be that those people not getting any medical care before insurance are getting it under this plan. Making the patients pay a small part of the total cost, along with what is paid by the insurance, should prevent imposition on the insurance.

The medical profession should take the lead in establishing measures to provide adequate medical service to every one and proper compensation for those who furnish such service.

DR. R. L. RAIFORD, Franklin: I think the last speaker struck the keynote when he says this problem is largely one of education. It is a well-known fact that almost everybody, it matters not how poor they are, can at least raise some money when they try hard enough. One of our patients who insisted he couldn't pay a cent towards hospital care, bought cigarettes and carelessly burned a big hole in a nice pair of blankets while smok-

ing. Another who had a serious abdominal injury could pay nothing on the hospital expense, but did help raise money to hire a lawyer to defend his brother who cut him.

We could enumerate case after case of this sort if it were necessary. I do not know just where the trouble lies, or the best remedy for it, but I am sure that if, in some way, we could educate the public to realize the seriousness of bearing their own financial burdens for sickness to the fullest extent of their ability, there would be less of a problem in taking care of those who are truly indigent and in need of help.

DR. G. F. SIMPSON, Purcellville: The matter is one of education of the public. We leave that education entirely to our health departments and do nothing except as applied to the individual patients that we treat and come in contact with. I believe the medical fraternity could render a great service, improve their condition, and improve the health condition of the public, and the economic condition, too, if they would take this matter intelligently to the bar of public opinion—because that is the point wherein we are criticised.

I was greatly interested in the State Health Officer's paper this afternoon, because he has outlined to us that we are co-ordinating and co-operating in the public good, and that is the duty every man takes when he enters medical college and takes a degree and becomes a practitioner of medicine. He enters a life of service to the public. Of course, he expects to be remunerated to the extent that he can practice successfully and take care of himself. But that is a very important point, that we do not carry on education of the public by the profession as a whole.

THE OVARIAN HORMONES—A REVIEW.*

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The purpose of this article is to present in a condensed form recent advances made in the study of ovarian physiology. Historical references are omitted for the sake of brevity. It is to be regretted that relatively little space can be devoted to therapeutic uses of the hormones, but this cannot be otherwise, for very little accurate, controlled data have been published concerning the efficacy of the hormones administered to humans.

NAMES OF THE OVARIAN HORMONES: (1) The œstrus producing substance derived from the Graafian follicle—"œstrin," "theelin," "female sex hormone," "folliculin." A closely related substance, theelol, differing from theelin in that it contains one less molecule of water,[1] probably should not be regarded as a separate hormone. (2) The progestational hormone[2] derived from the corpus luteum—"progestin" or "corporin."

NATURE OF THE HORMONES: Following the isolation of the œstrogenic hormone by Allen and Doisy[3] in 1923, researches by Fevold[1] into the chemical composition of the substance have revealed that it is a ketone with the empirical formula $C_{18}H_{22}O_2$. Extraction has been carried out with various fat solvents; in water it is only slightly soluble. It is stable to acids, alkalies and heat. The melting point is given as 250° C.; it is optically active and dextrorotatory.

Allen and Wintersteiner[4] have isolated four constituents from preparations of corpus luteum extract, one of which they believe to be progestin. This substance crystallizes from ether petroleum ether in blunt prisms, is thermostable, and is probably an unsaturated ketone with the empirical formula $C_{21}H_{30}O_2$.

OCCURRENCE OF THE HORMONES: In the normal human female cycle stimulation by the gonadotrophic hormone—or possibly hormones—of the anterior pituitary body provokes development of the Graafian follicle, whose epithelium in turn elaborates the female sex hormone in large amounts. Later in the cycle the corpus luteum produces an additional supply of œstrin, estimated by some workers to exceed the amount secreted by the Graafian follicle.[5] Œstrin is likewise found in the blood and urine of pregnant women and in the placenta, which tissue in itself secretes a large quantity of the hormone. The female sex hormone also occurs widely in plants, as shown by analyses employing the Allen-Doisy technique to be described below, but because of its almost universal distribution some workers are hesitant to regard it as a

*We wish to express our thanks to Dr. R. J. Main, of the Medical College of Virginia, for valuable suggestions and criticisms.

specific hormone. Finally, it has been shown to be present occasionally in varying amounts in the urine of many males.[6] The probable explanation of this interesting observation is that it is simply excreted as a waste product following the ingestion of certain vegetables rich in œstrin.

Progestin, on the other hand, is thought to be produced solely in the corpus luteum.

BIOLOGICAL ASSAYS OF THE HORMONES: Allen and Doisy[3] in 1923 described a relatively simple method for determining the presence of female sex hormone. The unknown substance is injected into castrated mice or rats, and if, within ninety-six hours after the injection, vaginal smears contain non-nucleated epithelial cells typical of œstrus, the assay is positive for the presence of œstrin. These same authors then defined a rat unit (R. U.) as the smallest amount of œstrin which will produce within three days œstrous reactions in vaginal smears of castrated mature rats. Other workers have standardized their preparations in mouse units (M. U.), of which 5 M. U. are equivalent to 1 R. U.

Further elaborating upon these assays, Frank and Goldberger[7] described their technique for estimating the presence and amount of female sex hormone in the circulating blood. In this test as well, the vaginal smears of mice determine the end point. Similar tests may be performed upon the urine and feces.

Since cyclical changes indicative of œstrus appear in the vaginal mucosa of rodents, Lindemann[8] reasoned that analogous variations should appear in the vaginas of women, differing according to the phase of the menstrual cycle. He concludes, however, from his studies that there is no relationship between the type of vaginal epithelial cells and the menstrual stage. Papanicoloau,[9] on the other hand, found the study of vaginal smears a most valuable procedure and strongly advocates further experimentation with it. From his results in thirteen women he states that there are four distinct phases of the menstrual cycle, which can be differentiated by the type of cell found in a loop smear from the vagina. There is, first, a congestive or menstrual phase (1st to 7th day after onset of menses); second, a follicular phase (8th to 12th day); third, a proliferative phase (12th to 17th day); and fourth, a pre-menstrual phase (18th to 1st day). If Papanicoloau's observations are verified by studies of more cases, it is obvious that a tremendous saving in laboratory work in clinical diagnosis will result. In discussing œstrous reactions in the above tests, one must remember that œstrus in the animal is not the same as menstruation in humans, for ovulation and menstruation in women are not simultaneous events.

Assays for the presence of progestin have not been developed as thoroughly as for œstrin or for the gonadotrophic hormone of the anterior pituitary gland.[10] A summary of tests for the presence of progestin is given by Mazer and Goldstein[11] as follows:

(1) Corner and Allen's method: ovarectomy is performed on a recently mated doe, which usually immediately checks endometrial and embryonal development. Injections of the luteal extract are then given for five days, and, on the sixth, the animal is killed and the uterus is examined microscopically. "The minimum quantity of progestin which, when divided into five daily doses and injected into a recently mated, castrated doe weighing 3 to 4 kg., will alter the endometrium to a state similar to that of the eighth day of normal pregnancy, is called a rabbit unit."

(2) Morrell's method based on the abolition, in the presence of progestin, of the usual contractile effect of posterior pituitary extract upon strips of uterus suspended in Ringer's solution.

FUNCTIONS OF ŒSTRIN AND PROGESTIN: The female sex hormone probably begins its functions during intra-uterine life.[6] Frank traces the development of the ovary from the fetus throughout adulthood, commenting on the facts that early Graafian follicles are developed in the fetus, that the uterus and breasts of the female fetus are activated, and that in a small percentage of instances menstruation takes place in the new born baby. It is probable that the last two phenomena result from stimulation by the maternal female sex hormone.

The Graafian follicle subserves two functions: production of the ovum, and secretion of œstrin, which in turn stimulates the development of the reproductive organs and secondary sex characters. Œstrin produces growth and vascularization of the uterus, growth and probably cornification of the vagina, development of the mammary glands, and other attributes of femininity. The developmental

changes of the organism from childhood through puberty to maturity, and the regressive changes following the menopause seem to follow closely, according to Frank, the body's supply of œstrin.

Œstrin, itself, when administered in large quantities, has a detrimental effect on the ovaries, resulting in a diminution in the size of the gland and the number of follicles. The mechanism responsible for such retrogressive changes probably lies in the pituitary gland. Œstrin inhibits the secretion of the gonadotrophic hormone, which in turn results in an absence of stimulationn of the ovary.[6, 7, 12]

The action of œstrin on the thyroid gland has been only incompletely worked out in animals. Ovarian hypofunction is thought to diminish thyroid activity,[11, 13] but both of these hypofunctions most likely are secondary to failure of the anterior pituitary gland.

The action of œstrin on the pancreas and adrenal glands is unknown.

Lesser effects of œstrin on metabolism in humans have been studied by several workers, who find no changes in blood calcium or cholesterol, but an increase in total fat and fatty acids in the blood following administration of the hormone.[14, 15]

That sexual desire in women may be dependent upon the activity of the female sex hormone is suggested,[16] but unproven and very doubtful, for marked libido is often found in castrates.

The functions of progestin appear to be less varied. This progestational hormone prepares the uterine mucosa for implantation of the fertilized ovum, provided that the uterus has been under the previous influence of œstrin. The tremendous volume of work done on mammals on the relationship of the corpus luteum and pregnancy supports the view that progestin performs a function necessary throughout gravidity, to prevent abortion, probably by inhibition of uterine contractions.[2, 17] Œstrin strongly stimulates uterine contractions, while progestin inhibits them.[11, 18]

The mechanics of menstruation have baffled physiologists from time immemorial. Below is given a brief composite summary of some of the more recently advanced theories. For elaborate studies of this anabolic and catabolic process, the reader is referred to Corner,[19] Parkes,[20] Novak,[21] Mazer and Goldstein,[11] Frank,[6] and Englebach.[22]

"The anterior pituitary contains one or more hormones which have the power of stimulating the growth of follicles, the production of œstrin," ovulation and the formation of the corpus luteum (Corner). As the follicle ripens, its supply of œstrin increases, causing a proliferation of the uterine mucosa. Rupture, or ovulation, usually takes place about the middle of the interval betwen menstrual cycles.[23] Some observers sharply limit the time of ovulation from the twelfth to the fourteenth day following the onset of the previous period, whereas others[24] believe that ovulation may occur at any time in the menstrual cycle. Whether ovulation is even a necessary phase of the menstrual cycle has never been proven, for Corner has shown that certain animals may exhibit menstruation without ovulation. He further states that "menstruation without ovulation, while it is rare in the human, occurs from time to time, perhaps chiefly in the very young and near the menopause."

The large quantity of follicular fluid, or œstrin, liberated at ovulation is absorbed by the pelvic lymphatics and carried by the blood stream to the uterus, where its utilization promotes uterine growth and vascularity (Mazer and Goldstein). With the formation of the corpus luteum, the body's content of œstrin rapidly increases, as, of course, does the supply of progestin. The latter hormone has the dual role of inhibiting further follicular growth and of preparing the endometrium, already under the influence of œstrin, for reception and development of the fertilized ovum. If pregnancy does not ensue, the corpus luteum regresses and menstruation sets in.

However, the sequence and mechanism is probably not so simple as just described. It is known that the blood content of œstrin is high just before menstruation, and Frank and Goldberger[25] have shown that there is a sharp reduction in the amount of œstrin just before the onset of menstruation. It may be that in humans, as in many experimental animals, this sudden reduction of œstrin produces menstruation, or pseudo-menstruation. Such a theory presupposes, of course, that ovulation has previously occurred. The progestin formed in the corpus luteum may be the agent which brings about this sudden release of œstrin, for it has been shown experimentally that progestin increases by five to seven times the excretion of the female sex hormone.[11] In summing up his discussion of this difficult problem, Corner declares that "the hypothesis that menstrua-

tion is essentially a breaking down of the premenstrual stage is certainly not true."

ABNORMALITIES OF OVARIAN FUNCTION

The vast scope of this aspect of ovarian physiology prevents more than mention of certain conditions. The clinical concepts of primary and secondary hypogonadism are elaborately discussed by Englebach,[22] Frank,[6] and Mazer and Goldstein.[11] All of these authors and others warn us against too great enthusiasm in the application of theories deduced from animal experimentation upon the treatment of humans. Unfortunately a large majority of reports in current journals dealing with the therapeutic uses of ovarian hormones has been based upon incomplete data, and in many instances such treatments have been nothing more than a "trial and error" regime. If it were economically possible, the hypogonadal patient should have determinations made weekly for four weeks of her blood and urine œstrin and anterior pituitary hormone, and/or her uterine endometrium should be studied microscopically. Such studies have been carried out on a large series of patients by Frank and his associates during the past eight years.[26] They report a regular cycle in the normal fertile menstruating woman, as shown by their assays using 40 c.c. of the patient's venous blood. Normally during pregnancy and during the week immediately preceding menstruation this amount of blood contains 1 M. U. or more of œstrin; at other times, less than 1 M. U. Studies upon the urine content of the sex hormone likewise showed a normal curve, in that increased excretion took place about the tenth day and again about three days before the menses. Similar "titrations" were carried out to determine the amount of anterior pituitary substance in the blood, and it was found that a full R. U. was present in the 40 c.c. specimen between the eighth and tenth day. Kurzrok[27] likewise determined the presence or absence of œstrin and the gonadotrophic hormone of the pituitary in the urine as an index of ovarian dysfunction. Urinary values are probably not as accurate as blood estimations, however, because of the possibility of a lowered renal threshold for œstrin, a condition analogous to renal glycosuria. These findings by Frank and Kurzrok constitute the only scale of normal values so far available to us and show the way for more intelligent diagnosis and therapy.

It cannot be emphasized too strongly that the ovaries are under the direct control of the anterior pituitary gland, and that ovarian failure is usually secondary to pituitary hypofunction. Therefore, logical treatment lies in the administration of this ovary-stimulating substance and not of the female sex hormone. Œstrin therapy should be reserved for those conditions exhibiting an absence or deficiency of the sex hormone, coincidental with a normal or increased supply of anterior pituitary hormone. (The pituitary hypersecretion probably results from a compensatory over-activity of that gland). Included in this grouping of hypogonadisms are most cases of the menopause, some cases of amenorrhea, and perhaps a few cases of relative sterility[26, 27, 28] and dysmenorrhea. Therapeutic results obtained by the use of theelin in the menopause, however, have been variable,[29] but some of the failures may be accounted for by a normal level of blood œstrin before therapy was instituted or by hyperactivity of other glands.

Complete hypogonadism can be diagnosed with certainty only in castrates. Werner and Collier,[30] after treating castrates with theelin, report that "theelin restores the breasts and genital tract to apparently the normal state after previous atrophy, that theelin produces endometrial changes similar to that of normal women at the time of ovulation, that theelin induces bleeding from the uterus qualitatively indistinguishable from menstruation in normal women, that theelin relieves the subjective symptoms that occur in women following castration." Unfortunately, neither confirmation nor denial of these findings have appeared in the literature.

Although œstrin has been used indiscriminately to treat many diseases unassociated with ovarian deficiency, with deservedly poor results, it is noteworthy that its administration in hemophilia and in gonorrhea in young girls may prove justifiable. Birch and others[31] maintain that the female sex hormone diminishes the coagulation time in hemophiliacs but this opinion is not upheld by Brem and Leopold, and Stetson and his associates.[32] The result of treating gonorrheal vaginitis in children with œstrin, as done by Lewis[33] and Brown,[33] and Huberman[33] have been sufficiently favorable to warrant further experimentation.

Other theoretically possible abnormalities of ovarian functions (an excessive supply of œstrin, coincidental with an excessive or deficient supply of

progestin) may be briefly mentioned. An oversupply of œstrin may account for excessive bleeding in pubertal girls and for the formation of uterine fibroids. It is more likely, however, that functional uterine bleeding in both young and mature women[6, 11] and the occurrence of uterine fibromata[34] result from the continued action of normal amounts of œstrin unopposed by progestin (diminished supply of, or complete absence of progestin). An oversupply of progestin, on the other hand, inhibits menstruation and may possibly prolong pregnancy.

A final word may be said in regard to the clinical use of the ovarian hormones. Dosages of œstrin should be prescribed in M. U. or R. U. and not in c.c. or grains. The method of administration is preferably by mouth or by hypodermic. There is no potent preparation of progestin available on the market today. Increase of progestin must be sought through stimulation of the corpus luteum by the prolan-like principle derived from the urine of pregnancy.

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Medical Arts Building.

THE ROLE OF ROENTGENOLOGY IN THE PRACTICE OF MEDICINE.*

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In order to understand better the unique position of roentgenology in the practice of medicine, it is necessary to recall briefly the early part of the life history of the X-ray. Roentgen announced his discovery in December, 1895. In less than thirty-nine years the use of the X-ray by the physician in his fight against disease has grown from a mere confirmatory aid to one of the greatest diagnostic and therapeutic agents available. Along with the increase in the use of the X-ray has developed a relatively new specialty, that of roentgenology. Therefore, a roentgenologist may be defined as a medical consultant using the X-ray.

Soon after the disocvery of the X-ray had been reported, many men the world over began experimenting with the new light. Some of the men were trained in medicine, others in science, particularly physics. A few men with no particular training were drafted by chance into working with the new discovery. Since the apparatus was crude and limited, it required great skill and patience merely to obtain the X-rays. Then there was the difficult problem of obtaining satisfactory plates for exposure and, after exposure, the equally difficult problem of developing and finishing the negative. No wonder many men quit in disgust, thinking that the use of the X-ray would never become practical. Often the men best suited to use the X-ray, that is the medically trained men, were the ones to give it up.

The medical men who persisted were, of course, interested primarily in making use of the X-ray in a practical way in the study of disease. They began to study their plates from this angle, and gradually the specialty of roentgenology was developed. Thus, we of the present generation owe these pioneers a great debt of gratitude for their careful, painstaking work, often made at great personal sacrifices.

Those men not trained in medicine often contributed much to the advancement of roentgenology by simplifying and perfecting apparatus. Both groups of men came to be recognized as experts in the use of the X-ray. Even in the early days, however, the opinions of the medical men were of greater value. At first one's reputation consisted chiefly of being able to obtain satisfactory roentgenograms. The physician asking for the examination considered himself competent to interpret the plate; for was it not a picture, and could not any one see the pathology since it was in black and white? But the more conscientious doctor discovered that often he could not find what he supposed was present in the plate. He then asked for help, and, if he was in the vicinity of a sincere man who was interested in X-ray work, he was fortunate. But if he found himself guided by a man who let his imagination dictate his reports, often great harm was done. To this day one often sees, in some of the older men particularly, a great deal of skepticism in regard to the diagnostic ability of the roentgenologist.

In spite of discouragement, certain men, working unselfishly and with the cooperation of the other specialties, have been able to improve apparatus and standardize technique, until finally, instead of spending hours in obtaining an uncertain roentgenogram, it is now possible for an untrained individual to take written directions and obtain a satisfactory roentgenogram of a hand, foot or knee.

Similarly, by studying the results of examinations with the findings at operation or necropsy, the speculative diagnoses have been displaced by logical diagnoses based on proved cases. Having always been required to write not only a diagnosis but also a description of his findings, the roentgenologist has often quite unknowingly helped himself to maintain a logical basis and to profit from his mistakes.

As time passed, it became more and more apparent that to get the greatest possible help from the X-ray, the examination should be made by a man trained in medicine. As is usual in all endeavor, when a new method is brought out, often the first to use it are men trying to exploit the discovery for personal gain. Also in medicine there has always been a certain amount of prejudice against anything mechanical. These two facts resulted in

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considering a man who devoted his time to working with the X-ray a sort of semi-quack, and tended to discourage well trained young men from taking up the work. Some physicians looked askance at the X-ray men as if the latter were trying to usurp something that did not belong to the roentgenologist. At times there developed an antagonism between these physicians and the X-ray men. But as the accuracy of the X-ray examinations became better known, this feeling disappeared. More and more men became interested in the study of the X-rays; men in the other specialties became interested, and, through working together, great advances were made in diagnosis and therapy.

Today one finds that there is practically no field in medicine in which the X-ray cannot be used to some advantage. Instead of X-raying the bones to confirm a diagnosis of fracture, often the diagnosis is made by the roentgenologist. Instead of X-raying an unusual case out of curiosity, a roentgen study of the patient is made in order to diagnose some systemic condition such as a nutritional disease or endocrine dysfunction. Instead of a single roentgenogram of the head to substantiate a diagnosis of fracture, many films are made in different positions. A minute study of the plates is made for evidence of bone disease, brain tumors, systemic disease; or the more complicated methods of encephalography or ventriculography may be used. The sinuses and teeth are radiographed for evidence of a focus of infection. The neck is not only examined for knowledge in regard to the bony structures, but soft tissues, such as the larynx, are minutely studied, not only by roentgenograms but also by the use of the fluoroscope to determine function. The chest is examined for all manner of pathology in the lungs from primary diseases, foreign bodies, tumors, etc., to localized areas of atelectasis in the new born. The heart can be accurately and quickly outlined and often a diagnosis made without recourse to clinical data.

The introduction of contrast media has made it possible to explore practically every hollow viscus in the body. The accuracy of diagnosis of lesions of the gastro-intestinal tract is remarkable. The gall-bladder is not only visualized as to its anatomical condition, but also as to its function. The kidneys can be explored either from a secretory standpoint or from a purely anatomical point of view. The bladder can be readily outlined. The uterus and tubes are satisfactorily visualized. Arteriograms are becoming of not infrequent occurrence. Still newer and better methods of examination are being constantly devised.

All manner of diseased conditions are being treated by the X-ray from simple skin lesions to deeply seated malignancies, the latter by the use of potentials up to 800,000 volts, the X-rays being filtered through 2 mm. or more of copper.

A short review of the present day uses of the X-ray makes it readily apparent that tremendous development has taken place in a short space of time. The roentgenologist has developed from a man, required to have a certain amount of nack at operating a machine and ability in photography and knowledge of medicine, into a medical man highly trained in the use of the X-ray and consulted in regard to all the specialties in medicine. This is perhaps expecting more than it is humanly possible for any one man to do efficiently.

What will the roentgenologist of the future be? No one can foretell. Certain facts, however, are known. The enormous field of usefulness of the X-ray makes it almost impossible for one man to be prepared to give the greatest amount of proficient help in all aspects. There must be some division of work. How best can this be done?

In the smaller communities, in medical groups and hospitals, one man doing all the X-ray work is probably the most efficient. The more difficult cases can be referred to men with greater experience, or the case can be studied more thoroughly and help obtained in some particular phase. In the larger communities the work may be done by men specializing in the different fields, such as chest, urology, etc., who do their own X-ray work. The great disadvantage of this plan is that it is very difficult for a man to study clearly the case from both angles without becoming prejudiced. Either he will be influenced by the clinical findings or he will try to make the clinical findings fit into the roentgenological.

Perhaps the better method would be to have two or more roentgenologists associated together. Each man could make a particular study of certain phases of the work so as to become especially proficient in these aspects. Thus the community would be economically served by men highly efficient in all phases of roentgenology. Undoubtedly, if two independent diagnoses from different medical view-

points agree, the chances of being correct are very great. If there is disagreement, a consultation between the roentgenologist and clinician will usually result in many points of difference being cleared up and agreement reached. This can be done only by having the X-ray examination made independently by a competent roentgenologist.

In spite of the fact that one hears a great deal about raising the standards of medicine by improving the laboratory facilities of the hospitals, one still finds much mediocre to poor X-ray work being done. Certain national medical organizations have attempted to remedy this. They have minutely prescribed every piece of X-ray apparatus that should be in a hospital of a given size. But they have neglected to require as high a standard in the quality of the men who are to direct these pieces of apparatus. Too much emphasis has been placed upon the mechanical and technical phase of the work and too little upon the professional.

In requiring the hospitals to invest relatively large amounts in equipment, there has been a tendency on the part of the directors to force the department to pay a dividend on the investment. Instead of considering the X-ray department as a part of the hospital, such as the kitchen or operating rooms, it is more and more being considered as a revenue-producing department.

Also, the tendency at present is to force the roentgenologist to practice more and more in the hospital. Once in the hospital on a full time basis, he is at the mercy of the directors. How many members of the medical profession are willing to work for the hospital on a fixed salary basis? I know of very few. Yet, it is advisable for the roentgenologist to do so, why not the internist, the pediatrician, the obstetrician and the surgeon? If one class of medical work can be more efficiently done in the hospital, why not all medical services, the patient then paying only one fee to the hospital and the hospital paying the doctor? The answer is obvious to all of you.

In addition to the above tendencies, there is also the trend for industrial and insurance organizations to equip X-ray laboratories giving X-ray examinations free to their employees. Just why they should go to the expense of equipping an X-ray laboratory is not clear to me. Usually not even a medically trained man is put in charge of the department. This is the custom which laymen follow in attempting to lower the costs of medical care to their employees. How much better it would be if they would take this same money and add it to the compensation of these same employees who would then be more able to pay for such adequate medical care as they may need.

Is it not a strange position in which the roentgenologist of today finds himself in relation to his medical conferees? I am not complaining; I am sure that as the position of the roentgenologist becomes better known to the other members of the medical fraternity, they will see in the situation of the roentgenologist what appears to be the present trend and that proper steps will be taken to restore and maintain the practice of medicine in the hands of the doctors.

We are watching revolutionary changes taking place in other lines of endeavor. They can occur just as suddenly in ours. But whatever does take place, one thing is certain and that is we must be prepared to cooperate with each other to a greater degree than ever before. To many medical men this will be a really difficult problem. We must be alert and prepared to guide whatever changes do occur into the best possible channels for all concerned. This requires consideration of each others problems so that all may cooperate for the common good, not forgetting the welfare of the patient.

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PARASITOLOGY IN RELATION TO PUBLIC HEALTH.

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State medicine in its relation to public health differs primarily from private practice in that the emphasis in State medicine falls on research and on the prevention of disease, whereas the emphasis in private practice falls on diagnosis and treatment. The former involves large-scale operations outside

of the scope of the practicing physician, and the latter involves small-scale operations, with detailed attention to the individual, which attention is of a sort not usually contemplated in public health service.

In parasitology, public health measures must first involve research or take cognizance of the results of research, for the control of parasites follows from the application of suitable methods of control to certain basic features in the life histories of parasites. One of the first essentials is a knowledge of the life histories of parasites; most control measures follow from this. The practicing physician and the public health officer are the front line troops in the warfare on animal parasites. Their books of tactics and strategy are supplied in part from their own forces, but, without the information furnished by the intelligence service that spies on our parasite enemies, identifies them, furnishes information as to their tactics, strategy, lines of communication and similar things, our combat troops would at least waste ammunition and in many cases would sustain defeat through misdirected efforts.

The correlation between scientific research and public health measures in the control of parasites, and the absolute necessity for research as a preliminary to formulating control measures, can best be shown in the form of a chart, such as is given with this paper and which tells the story in such a way that only a little elaboration is necessary to bring out the facts depicted. The control of parasites is so decidedly a form of warfare against certain enemies of humanity that I have seen fit to use some military terms in discussing this subject and to regard the chart as illustrating the tactics of campaigns against human parasites.

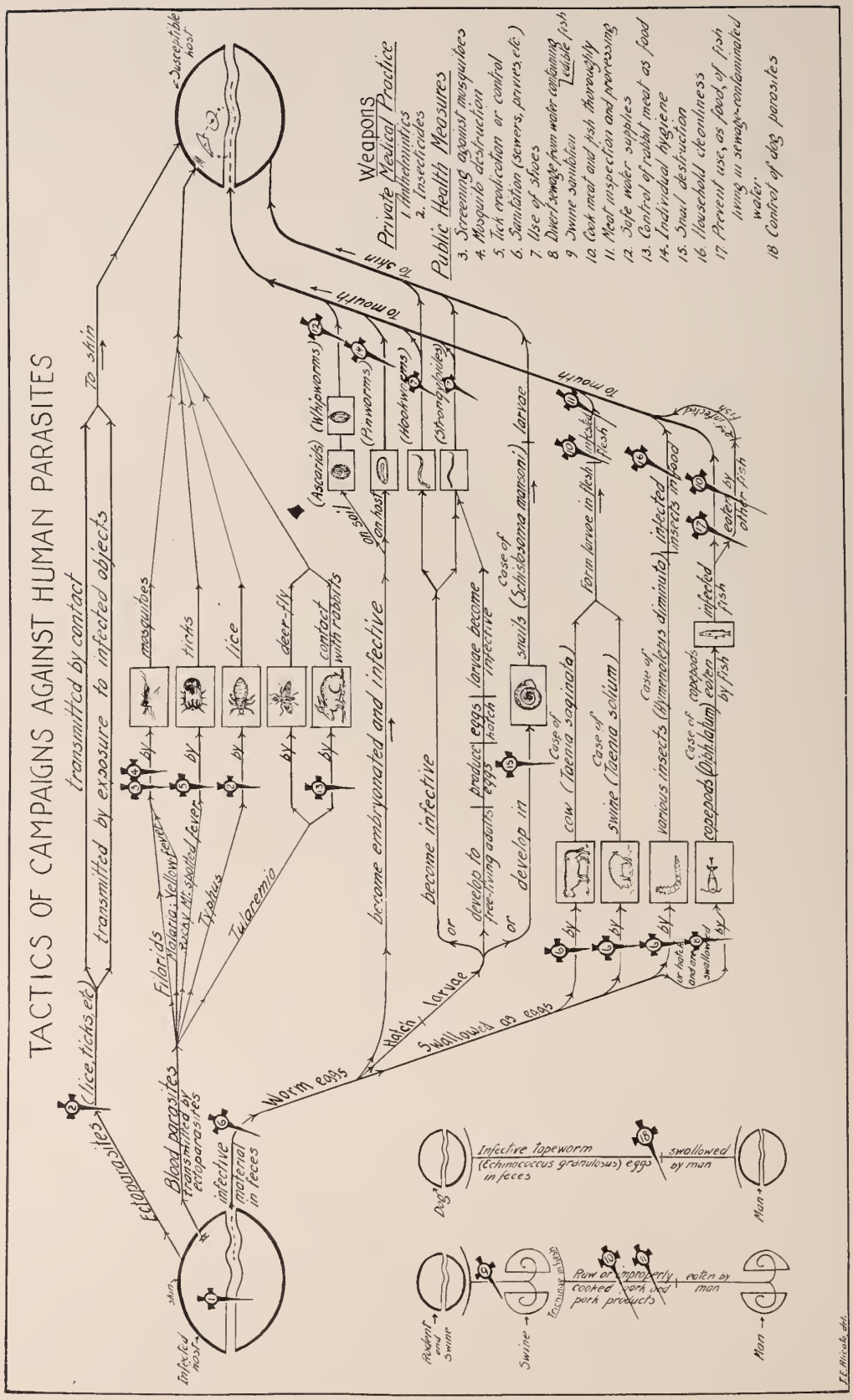
An inspection of the chart shows that it illustrates diagrammatically, and with the omission of some details, the life histories of a group of representative parasites, or in some cases the relation between diseases not caused by animal parasites, but conveyed by animal parasites as vectors. Near the upper left-hand side of the chart there is a diagrammatic representation of an infested patient, and at the upper right-hand side is a diagrammatic representation of a susceptible human being who is a potential patient. The lines drawn from the infested individual to the susceptible individual indicate the lines of communication over which our enemies travel in moving from an occupied terrain, a patient, to an unoccupied terrain, a susceptible person. Our knowledge as to these lines of communication has been obtained through the persistent activities of the intelligence service in the laboratory and field, and without the reports of these soldiers in the medical army which combats diseases, this chart could not have been drawn.

In the lower left-hand corner of the chart are covered two special cases of parasitisms in which the parasite enemy moves to the attack not from man to man but from some other mammal to man.

Leaving out of consideration, for the time being, the daggers which are drawn across the various lines of communication used by parasites, the chart presents a diagram of the tactics used by our parasitic enemies in their attack on mankind. It shows that ectoparasites move from the patient to a susceptible human being by contact, or through the exposure of the susceptible individual to infested objects; that blood parasites may move from a patient to a susceptible person by means of ectoparasites, or, in one case, along an alternative route; that worm eggs passed by a patient may infect the susceptible host as embryonated eggs, or may hatch and develop to infective larvae, the eggs or larvae entering through the mouth, or the larvae through the skin; or that certain development in intermediate hosts may be necessary before the parasite can attack a susceptible individual by mouth or through the skin, the parasite in some cases being swallowed in the flesh of an intermediate host when the flesh is eaten as food, or being swallowed in intermediate hosts present as contaminations in various foods.

With this diagram of the enemy tactics spread out before us, it is possible to take up the question as to how we may cut the enemy lines of communication, and to answer this question so far as our tactics have been developed to the point where they are reasonably effective and practical.

It is permissible to turn from the subject of public health measures for a moment to show that the activities of the physician in private practice are likewise based upon research. The physician is indebted to the intelligence service of our medical army for many of the effective weapons which have been placed in his hands for the destruction of internal and external parasites. His anthelmintic weapons have been discovered by the intelligence service in many cases, and in others the precise method of using them to the best advantage has been estab-


TACTICS OF CAMPAIGNS AGAINST HUMAN PARASITES
transmitted by contact
transmitted by exposure to infected objects
To skin
To mouth
Ectoparasites
(lice, ticks, etc.)
Blood parasites transmitted by ectoparasites
Infective material in feces
Worm eggs
Susceptible host
Infected host
Weapons
Private Medical Practice
1. Anthelmintics
2. Insecticides
Public Health Measures
3. Screening against mosquitoes
4. Mosquito destruction
5. Tick eradication or control
6. Sanitation (sewers, privies etc.)
7. Use of shoes
8. Diet
9. Swine sanitation
10. Cook meat and fish thoroughly
11. Meat inspection and processing
12. Safe water supplies
13. Control of rabbit meat as food
14. Individual hygiene
15. Snail destruction
16. Household cleanliness
17. Prevent use, as food, of fish living in sewage-contaminated water.
18. Control of dog parasites
mosquitoes
ticks
lice
deer-fly
contact with rodents
Filaria
Malaria, Yellow fever
Rocky Mt. spotted fever
Typhus
Tularemia
by
become embryonated and infective
become infective
develop to free-living adults
or develop in
product eggs
eggs hatch
larvae become infective
Case of snails (Schistosoma mansoni)
larvae
form larvae in flesh
infected fish
Case of cow (Taenia saginata)
Case of swine (Taenia solium)
Case of various insects (Hymenolepis diminuta)
insects infected food
Case of copepods (Dibothrium)
copepods eaten by fish
infected fish
eaten by other fish
Hatch larvae
Swallowed as eggs
or hatch and are swallowed
(Ascaris) (Whipworms)
(Pinworms)
(Hookworms)
(Strongyloides)
on soil
on host
Infective tapeworm (Echinococcus granulosus) eggs in feces
swallowed by man
Dog
Man
Rodent and Swine
Swine
Tapeworm larvae
Raw or improperly cooked pork and pork products
eaten by man
Man
F.F. Riccio, del.

lished by the intelligence service. Patient investigations of the habits of our worm enemies have shown that some of these migrate as larvae through the body of the host for a week or two before reaching the digestive tract, or actually start from the digestive tract and migrate for a considerable time before returning to the digestive tract. In such cases we know that a patient should be protected from renewed infection for a certain length of time before being treated, in order that all of these larvae may get back to the digestive tract where they can be attacked with our anthelmintic weapons, as, otherwise, the attack may clear out the occupied terrain only to have that terrain reoccupied by larvae returning from areas outside of the front line trenches and where they cannot be reached by our anthelmintic weapons. This is true of hookworms, and the widespread belief that hookworm disease is practically eradicated from the United States must not be taken seriously. Similarly, the intelligence service has supplied the physicians, who make up the combat service in private practice, with insecticides for the destruction of external parasites, and has taught them the precautions which must be taken to cut the enemy lines of communication by the use of weapons other than insecticides.

However, it is with the weapons which are used in the form of public health measures for the destruction of parasites that we are primarily concerned. Each of the daggers which cut the lines of communication over which parasites move from an occupied terrain, the patient, to an unoccupied terrain, the susceptible host, is numbered, and an explanation of these numbers is given in the legend under "Weapons." A survey of our armamentarium against parasites shows thaat these weapons are very diverse and that they have been developed in many cases with special reference to a particular enemy of peculiar habits and with unusual lines of communication in traveling from an occupied area to an unoccupied area. On the other hand, certain weapons cut a line of communication used by many parasites and in these cases one weapon is effective against many kinds of enemies.

An illustration of the first sort of highly specialized lines of communication is that at the bottom and center of the chart covering the case of the broad fish tapeworm, *Diphyllobothrium latum*. This enemy moves out of the occupied terrain, the patient, by way of the feces, and on reaching water the tapeworm eggs hatch and give rise to young larvae which infect copepods. These copepods are eaten by fish and the larvae develop to infective second stage larvae. These fish may in turn be eaten by other fish which become infected with infective larvae, the human host becoming infected if such fish are not adequately cooked before being eaten. In the case of this parasite, three special lines of attack by public health officers are indicated, namely, the diversion of sewage from water containing edible fish, the prevention of the use, as food, of fish living in sewage-contaminated waters, and education of the public in the habit of cooking fish thoroughly.

In this same case, however, it will be noted that farther back on the line dagger No. 6 illustrates a weapon of widespread value in the attack on worm parasites, since it cuts the main line of communication for all parasites leaving the patient by way of the feces. This dagger refers to sanitation in connection with the modern use of sewers, privies and similar things, and is probably the outstandingly valuable weapon which has resulted in modern times in the eradication of many of our parasitic enemies from a large part of the civilized world. Its efficiency may be judged by the fact that in cities the incidence of parasites falls to a low level as compared with rural districts, that in the temperate zones the incidence is very low by comparison with the tropics, and that in the twentieth century the incidence is very low in comparison with the eighteenth century. It is true that a few parasites with special adaptations break through the very efficient guard which is established by sanitation of this sort, and that even in large cities we do find pinworms and amoebae even in persons whose economic, social and intellectual level is very high. Nevertheless, this form of sanitation is a wonderful weapon of great efficiency in keeping our parasite enemies at bay.

To show how efficient that weapon is, let us consider the situation in the field of veterinary medicine. Prophylactic measures against parasites of domesticated animals are blocked along this line by the incapacity of livestock to pattern after the more highly civilized human aninal in their disposal of feces. It is true that cats, by virtue of a natural habit, will take advantage of a suitable type of soil privy, if this is provided, and that stallions show a natural tendency always to use a certain

portion of their fields or paddocks in defecating, but so far as sanitation is concerned for livestock in general, their habits in disposing of excreta have reached a level which is no higher than that attained in the Middle Ages and even later by king and serf alike in their use of the rush-strewn floors of palace, castle or hovel. It is true that as a rule livestock manure is less objectionable than human feces, but that is a mere matter of aesthetics, and does not alter the fact that the most valuable of sanitary procedures in matters of human health—the use of a sewerage system—is not generally applicable to livestock in matters involving control of parasites using the manure as a vehicle for infective material. In lieu of a sewerage system for livestock, such less effective measures as rotation of pastures, or of stock on pastures, of forage crops, and similar things, must be used.

It is hardly necessary to discuss in detail the weapons shown on the chart, or to explain the reasons why they are used, how they operate, or why they are effective. Such things as screening against mosquitoes as control measures for filarids, malaria, and yellow fever are familiar to the physician. However, the chart does show some weapons which have been employed exclusively in veterinary medicine, or to a greater extent in veterinary medicine than in human medicine, and at these points a word of explanation is desirable. Humanity and livestock share many parasites in common, and human and veterinary medicine supplement one another in this as in other fields.

In the lower left part of the chart we have the special case of trichinosis, and it will be noted that there are three weapons which may be employed in combating the deadly *Trichinella spiralis*. The first dagger, No. 9, is swine sanitation. The swine sanitation system was developed by Dr. B. H. Ransom, formerly chief of the Zoological Division of the Bureau of Animal Industry, with the collaboration of some of his associates. It was intended primarily to prevent the infection of swine with the large round-worm, *Ascaris suum*, a parasite morphologically indistinguishable from the human round-worm, *Ascaris lumbricoides*, and which may represent a strain of the human parasite that has become adapted to swine. Under this system, sows about to farrow are washed to remove worm eggs from the skin and feet, and placed in farrowing houses which have been thoroughly cleansed to remove any worm eggs. Within ten days after the birth of the pigs and before any ascarid eggs can reach the infective stage, the sow and its litter are hauled on to a field which has been plowed and sowed to a forage crop, and turned loose on this forage crop. The young pigs are kept here for at least four months or until they have reached market weight. Years of experience have shown that this system is a control measure for many things other than ascarids, as might have been expected, since sanitation is the nearest thing to a panacea in the prevention of disease that we have at present.

I have gradually come to the conviction that this system is the best weapon that we have at present for the control of trichina. There has been much debate as to whether swine become infected with trichinae as a rule by eating rats or by eating the carcasses of dead swine. Regardless of the facts, the swine sanitation system is probably an effective control for trichinosis, for one reason because rats usually remain around corn cribs, outhouses, and other buildings, and do not go out in the open field, so that under this system it is highly unlikely that pigs would devour rats. Furthermore, any farmer intelligent enough to use this system is too intelligent to leave the carcasses of dead swine lying around his field for other pigs to eat. Finally, swine on pasture are not fed on swill or garbage that might contain trichinous meat. In effect, then, the swine sanitation system is a weapon which cuts the lines of communication between swine and rats, or swine carcasses, or pork scraps. Consequently, the swine raised under this system probably come to market free from trichinae and safe as human food. However, the proportion of pigs in the United States which are raised under the swine sanitation system is not nearly so great as it should be, and for the time being we must depend in part on the two other weapons indicated in the diagram.

The more important of these two weapons is the thorough cooking of pork, and the large numbers of cases of human trichinosis in the United States of late gives point to this measure. Health officers should educate the public by newspaper releases or otherwise on the desirability of cooking pork thoroughly, and on the danger of sampling raw sausage in making sausage in the home or on the farm. In this connection it should be kept in mind that microscopic inspection for trichinae is not practiced in the meat inspection service in the United States.

The reasons for this are that, as a rule, Americans prefer their pork well cooked and microscopic inspection is an extremely expensive process. In Europe where much less meat is eaten, and where slaughter house procedures are carried out at a much slower rate, it has been found possible to institute microscopic inspection, but in the United States the adoption of microscopic inspection would probably increase the costs of our meat inspection service by millons of dollars. In lieu of any such inspection, all pork products intended to be eaten raw must be processed under the federal meat inspection regulations, by the use of such amounts of heat, cold, salt and seasoning as have been found to be effective in killing trichinae. Finally, it should be kept in mind that the federal meat inspection is primarily intended for meats and meat products which go into interstate commerce, and that only about 70 per cent of the slaughtering in the United States is under federal inspection. The slaughtering which is not under federal inspection is, in a few instances, carried out under an inspection equal to the federal, but in many more instances it is either very superficial or inadequate, or there is none. I recommend to all public health officers that they make it part of their business to see that within their jurisdiction all meats offered for sale are from slaughtering plants which have a meat inspection service, carried out by veterinarians trained in this work, and equal in its requirements to those of the federal service.

The special case illustrated by *Schistosoma mansoni* needs very little attention in this country at present, for the reason that blood flukes are not known to be established as parasites of man in the continental United States. However, they do constitute a very serious problem in Puerto Rico, a possession of the United States, and should be eradicated from that island. It is comparatively easy to destroy snails, which are the intermediate hosts of flukes, by very weak solutions of copper sulphate, and a campaign against a fluke parasite of sheep in California, carried out by the Bureau of Animal Industry largely along the line of snail destruction, has proven highly effective in practically eradicating these flukes from sheep in the course of three years.

It does not seem to be necessary to go into further detail in discussing the information shown in the chart which illustrates the tactics of our enemies in moving from infested patients to susceptible individuals, and illustrates by the use of daggers the control measures which may be applied. Some of these control measures are not well developed. We have an illustration of this in the case of Rocky Mountain spotted fever which is transmitted by two species of ticks, *Dermacentor andersoni* and *D. variabilis*. The indicated line of control in the field of public health measures is tick destruction or control of ticks by some other means, but it is much easier to say this than to outline an effective and practical method. The ticks are three-host ticks which at various stages of their development may attack birds, rodents, carnivores, ruminants and man. Because of their wide range of hosts, and because these hosts are largely out of our control, and because of the abundance of seed ticks throughout our woods and fields, it is an extremely difficult matter to control them, and no practical control measures have been developed up to the present. The fact that Rocky Mountain spotted fever appears to have jumped from the Rocky Mountains to the Eastern Seaboard is cause for some apprehension, especially in view of the fact that our intelligence service has not yet furnished us with any practical measures by means of which we can cut the lines of communication of this enemy through an attack on its tick vectors. Here is an illustration of the absolute dependence of our combat forces in the field of public health upon their associates in the intelligence service of the research laboratories.

In this connection may I remind you that in addition to our war on our parasite enemies, both the public health officers and the research workers are constantly under fire from one section of the human beings whom we are endeavoring to protect by our activities. A public health officer is at times hampered by persons who feel that their business will be injured if an open campaign reveals the fact that a disease is prevalent in their localities. Regarding these persons who would sacrifice public health for individual profit, no comment is necessary. In addition, both the public health officer and the research worker are constantly, or periodically, under fire from the so-called antivivisectionists who would destroy the intelligence service of our medical army by preventing experiments on animals. These enemies of mankind must be combated whenever possible, or else the weapons and tactics which we must

have to combat Rocky Mountain spotted fever and various other diseases against which no weapons and combat tactics have as yet been developed by the intelligence service, will not be developed, and these diseases will continue to take their toll in human lives and suffering and in monetary loss.

THE DIAGNOSIS OF CHRONIC APPENDICITIS.*

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In selecting the topic of chronic appendicitis for discussion, I am aware of the fact that considerable doubt has been expressed by a number of able clinicians as to the existence of such a disease. There is also disagreement among pathologists who have studied so-called chronically diseased appendices as to what criteria should be adopted in recording the presence or absence of disease. It is true that an abnormal appendix may be present which shows under the microscope none of the changes signified by the suffix-itis. Lack of these changes does not mean that there may not be a disturbance of function in the organ giving rise to local or distant reflex symptoms. Perhaps the name, chronic appendicitis, is not descriptive of the disease, but long usage has established it in the minds of the profession and the laity, and its use simplifies discussion among ourselves and is a name readily understood by our patients.

If we wish to do so, we may even extend our controversy to the pronunciation of this malady. In this connection, I am reminded of a story told by Dr. Alfred Worcester, who, incidentally, was one of the first individuals to be operated on for appendicitis. In discussing a paper by Steele on appendicitis, he recalled over-hearing a conversation between two boys who had had the disease. One called it appendic*i*tis and the other "appendiceetis," but the former insisted that he had the disease in his side and not in his seat. I am convinced that there occur changes in the appendix as the result of chronic inflammation or of previous acute infection which can give rise to local pain or discomfort, or which, according to the teaching of Alvarez, act as an irritable focus which reflexly disturbs the normal gradient of gastrointestinal activity, producing symptoms largely of motor origin.

*Read before the Richmond Academy of Medicine, May 22, 1934.

It would be tedious to review the literature on the subject because it is so voluminous. Watkins stated in 1932 that about 662 papers concerning chronic appendicitis had been published up to that date. Nor will I burden you with statistics giving the end results of appendectomy. Poor results, as judged by failure to relieve the symptoms for which the operation was performed, range from 10 to 70 per cent in various series reported. A number of writers have analyzed the cause of failure in these cases, and the obvious conclusion to be drawn is that mistakes in diagnosis or improper recommendations were the explanation of the unhappy results. It would seem, then, that a discussion of the diagnosis of chronic appendicitis should be worthwhile.

Roentgenologists are not entirely in agreement among themselves as to the findings that indicate an abnormal appendix. I am sure that they can at times demonstrate certain things which will help us in reaching a proper conclusion. An appendix which is fixed in any position or which is tender to direct pressure in whatever location it may be placed is probably a diseased one. Obvious irregularity in the diameter of its lumen, the presence of definite vacuoles suggesting fecoliths, or, perhaps, marked delay in emptying the barium are additional signs of some value. Should the appendix not be visualized, this in itself cannot be regarded as a positive indication of disease, but if there is persistent tenderness in the normal location of the organ, this may be considered of distinct importance. If the Roentgen examination of the appendix is satisfactory in every respect and no abnormal changes are demonstrated, it is still, at times, unwise to eliminate the organ from consideration as a cause of the sypmtoms. It should be emphasized, however, that in the presence of positive Roentgen findings cor-

roborative evidence of disease must be adduced from the history and physical examination before an operation is advised. A further word may be added at this point in regard to fecoliths. The presence of these inspissated masses of feces in the appendix cannot always be determined clinically or Roentgenologically, but I am sure I have seen a number of patients who have had attacks of appendiceal colic without developing signs of acute inflammation. It would seem logical that this would be true when we consider the fact that a stone in the cystic duct can produce gall-bladder colic, and obstruction to the ureter promptly invokes kidney colic. I was particularly struck with the importance of appendiceal fecoliths a few years ago while watching the incision of an appendiceal abscess by one of my colleagues. After most of the pus had been removed by suction, he began exploring the cavity with forceps and in a few moments came up with a good sized fecolith. He remarked on the frequency with which they occur in this type of abscess and the necessity of removing them in order to facilitate healing.

Chronic or recurrent pain in the lower right abdomen is regarded as a symptom of chronic appendicitis, and no one can deny the fact that an appendix which is plastered to the posterior abdominal wall, or whose tip is stuck up under the liver or to the lateral abdominal wall, can give rise to chronic pain frequently described as dragging or pulling. It must be remembered, however, that a spastic colon, a dilated atonic colon possibly with perityphilitis, diseases of the right kidney and ureter, inflammation of the right sacroiliac joint, parietal neuralgia, pelvic disease and a number of other conditions will have to be excluded as a cause of the pain. These same abnormalities may explain tenderness in the region of McBurney's point. The differentiation between superficial and deep tenderness, according to the method of Carnett, should always be used, as it is of distinct value.

There is sufficient evidence to indicate that chronic disease of the appendix may give rise to pain in the epigastrium, in the upper right quadrant and even in the lower left quadrant. A recent report from the Mayo Clinic analyzes the results after five years in one hundred patients who complained chiefly of abdominal pain and dyspepsia for which no cause could be found clinically, and on exploration nothing was found to be done but removal of the appendix. Seventy-six per cent of these patients were cured and 14 per cent were improved by the operation.

There is no question that an individual with a typical history of recurrent attacks of acute appendicitis should be operated on, preferably in the interim between attacks.

A good deal of discussion has been held over the question of the relation of chronic appendicitis and peptic ulcer. I seriously doubt whether chronic disease of the appendix can actually cause a peptic ulcer, and know of no way to offer proof either way, but on several occasions I have advised removal of an obviously chronically diseased appendix through a McBurney incision prior to the institution of medical treatment for the ulcer. It is entirely possible that removing this irritant focus may lessen spasm about the pylorus which is such a prominent feature of most peptic ulcers.

We now come to the discussion of that large group of individuals who have persistent or recurring indigestion, often of the ulcer type, who show on Roentgen examination no demonstrable lesions in the upper abdomen except, possibly, hyperactivity of the musculature about the pylorus and perhaps a gastric hyperacidity. They may or may not give a history of acute attacks of appendicitis. If there are present any of the Roentgen changes mentioned above, and if the individual is otherwise healthy, if he is not of the thin, visceroptotic type, and if we are unable to elicit a history of over-work, worry or nervous fatigue, we may advise removal of the appendix with excellent prospect of cure of the condition. This cure may not eventuate promptly, however, as the reflex nervous hyperactivity of the gastrointestinal tract may become a habit, and may require dietary regulation, antispasmodics and alkalies for weeks or months before the symptoms completely subside.

My last group of cases constitute the most difficult of all. I often feel that these individuals should wear a label on which is inscribed "Surgeon beware." In this group we find the constitutionally inadequate patients. They complain of cardiac symptoms, such as palpitation and "gas pressing on the heart," they have tightness in the chest as if a satisfying breath is impossible, they have diffuse vasomotor disturbances, and almost invariably gas-

trointestinal symptoms. These consist of a lump in the throat, flatulence, constipation, indefinite abdominal pain often along the course of the colon with perhaps mucus in the stools, and other symptoms too numerous to mention. They are usually lean and chronically fatigued. They have Roentgenological evidence of visceroptosis and hypotonicity. If these people develop evidence of acute appendicitis they should be operated on. An operation for chronic appendicitis, however, should be undertaken only after lengthy deliberation and then only after a definite understanding with the patient that the operation may not cure his symptoms. It is true that these patients are often temporarily benefited by the operation because it makes a profound psychic impression and because it necessitates a period of rest in bed, but any physician who has made physical examinations of several thousand patients can recall the number of abdominal scars he has noted in individuals who have had no permanent benefit from their operations.

I think it an excellent plan to remove the appendix when the abdomen is opened for another purpose, provided it does not jeopardize the patient's chance for recovery, because this eliminates the possibility of a future attack of acute appendicitis.

If we are going to give the best possible service to our patients, it would be well to employ the old railroad sign, "Stop, Look and Listen," before advising any appendectomy for chronic appendicitis. The operation is considered a relatively simple one, but it carries a definite chance of mortality and unexpected post-operative complications do occur. Furthermore, the financial angle of the situation is one that cannot be lightly dismissed in these times of economic stress.

608 Professional Building.

WHAT IS VIRGINIA DOING TO CURB VENEREAL DISEASES?

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In a survey of the reports of the different state health departments, one is impressed with the absence of any standardized plan for controlling the venereal diseases. While the United States Public Health Service recognizes the importance of standardized measures for preventing their spread, the health departments of the several states show the greatest diversity of opinion as to the proper means of combating this acknowledged menace. For example, Montana makes no mention of the existence of these diseases in that state during the biennium ending June 1, 1932. And in our own fair Virginia, the Assistant Commissioner of Health frankly states that "there is no division of venereal diseases in his State, in the true sense of the term," and "That its activity is limited to the distribution of the arsenicals to the profession at a reduced price and in answering an occasional request for information upon the subject." Yet, in a statistical study of the mortality reports in Virginia, Dr. C. B. Ransone, of Newport News, states that 4,415 people died from syphilis alone in one year—twice as many deaths as from tuberculosis, a little less than three times the number of deaths from pneumonia and cancer combined, during the same length of time, and twenty-five times as many as died from typhoid fever.

The mortality from syphilis, as formidable as it is, is relatively insignificant compared with the disabling morbidity resulting from it. The disease manifests a deadly affinity for the vital organs, particularly the heart, blood vessels, brain, and spinal cord. Fully 25 per cent of insanity and one-third of hopeless paralytic cases are due to syphilitic infection. In addition, blindness and deafness are frequently caused by involvement of the optic or auditory nerve in the specific process. Indeed, no tissue in the body is immune to its destructive action and it is often transmitted to succeeding generations.

While this state of affairs is perfectly well known to every public health officer, one is greatly disappointed in studying the annual health reports to learn that a great many of them appear to ignore the problem entirely. The reason may be that state officials are sometimes guided by political consid-

erations to some extent, and it is a part of the creed of politicians to pass up unpopular campaigns. Nevertheless, some are very much concerned about the seriousness of the situation and are actively combating the spread of the contagion with every weapon at their disposal. For instance, Dr. Kimmerer, the Director of the State Hygienic Laboratory of Mississippi says, "Syphilis is a much more serious problem in the state than is generally known." In the period from July 1, 1927, to June 30, 1929, 22,210 cases of gonorrhea and 14,223 cases of syphilis were being treated by qualified physicians in Mississippi. The Lord knows how many more cases were being made worse by quacks, chiropractors and drug store prescriptions. During the same time, there were only 3,517 cases of tuberculosis, 2,215 cases of cancer, and 10,874 cases of pneumonia treated in the state, the prevalence of the venereal diseases being greater than all other diseases combined, except malaria which is notoriously rampant in Mississippi.

Dr. George H. Bigelow, Health Commissioner of Massachusetts, says: "Next to the common cold, gonorrhea and syphilis are the most important of the communicable diseases in Massachusetts." "Yet, because of the associated taboo, they are the most difficult to control." Dr. Bigelow thinks this is so because we cannot effectively use our knowledge (which is ample) because of the psychological factor which is so important and so very different in the various elements of the population. However, Massachusetts, as usual, is in the forefront in trying to build up a sane and informed public opinion. And how can any state afford to do otherwise? About 70 per cent of all men have been infected with a venereal disease. Twenty per cent contracted the disease after marriage and at least one-half of these infected their wives! Still, in the annual report of the Health Department of South Carolina for 1931, there is no recommendation made for alleviating or preventing the venereal diseases. Likewise, in the report from Arizona for 1931 there is not one word mentioning the venereal diseases, directly or indirectly.

Contrasting sharply with the last mentioned states, Dr. A. E. Bostrom, of South Dakota, has this to say upon the subject: "Syphilis and gonorrhea have been mentioned in whispers. It is time we take a more sensible view of these diseases that are causing so much suffering, helping fill our schools for the feeble-minded and our insane asylums and causing, according to some of our best authorities, 80 per cent of the abdominal operations in women." South Dakota, needless to say, has a modern Division of Venereal Diseases, utilizing every available means to educate the public and treat the afflicted.

In other states, the health authorities are making earnest efforts to correct the inexcusable neglect of the venereal disease problem. Dr. A. C. Jost, secretary of the Delaware Department of Health, acknowledges the half hearted measures which have been in existence and states that an effort is being made to correct the defect. Among the states doing everything possible to solve the problem are New York, Illinois, Pennsylvania, Rhode Island, and Massachusetts. Others, like Michigan, while not mentioning specifically the venereal diseases in their annual reports, show that they are cognizant of their importance in a public health program. Lectures to high school pupils, teachers and parent-teacher associations are their chief means in educating the public. Law enforcement is only resorted to in exceptional cases where flagrant violations of orders against spreading the infection occur.

This, then, in a general way is the attitude of the several states towards removing this growing menace to the health and happiness of our citizens, varying from extreme inaction in Virginia, Arizona, Montana, and South Carolina to modern and efficient staffs devoting their entire time to fighting the progress and ultimately removing the venereal diseases as a public health problem in New York, Pennsylvania, Mississippi, Illinois, Rhode Island and Connecticut.

We may as well admit, however, that there is danger in too much activity as well as in inaction. It is an axiom in preventive medicine that administrative control of communicable diseases is obviously impossible. The best that can be done is the education of the laity as to the causation and the early signs of these diseases and the proper measures for their prevention and cure. Herein lies the danger of over-zealous propaganda and ballyhoo in putting the matter before the public. Recent experience in this country has made it pretty plain, I think, that morals cannot be legislated into people; nor can

they be frightened into compliance with any program until they have been educated as to the need, the desire and the benefits to be derived from a given course of action.

Thus, I have no sympathy whatever with strict law enforcement except in the case of the most callous offenders. Likewise, the display of posters of a sensational or exaggerated type are in my opinion undesirable. Only the fundamental practical facts relative to the diseases in question should be brought before the public.

Motion pictures are helpful in putting across some essential knowledge which every layman should have but as a rule inaccuracy creeps in during the process of dramatization which detracts somewhat from an otherwise valuable medium of instruction.

The "health code," or the "visual health educational car" as it is sometimes called, while of great value in educational work in connection with the communicable diseases in general is not so well adapted to the venereal diseases. This is my own opinion and is open to discussion.

Venereal disease clinics have undoubtedly been helpful in some localities but for all persons who have availed themselves of this service there must have been five others who for one reason or another have sought treatment from drug stores or quacks. It would seem that the chief usefulness of public clinics would be in large industrial plants where routine examinations and proper treatment can be required to qualify the worker for continued employment. The question of infringing upon the rights of private physicians is to be considered so that it might be more profitable to permit the patient to employ a doctor of his own choice, provided he is qualified, the state bearing all or a part of the expense in the case of indigent persons in the manner to be mentioned hereafter.

It appears, then, that probably the best method of controlling venereal diseases is based upon three fundamental principles, as follows:

1st—Education of the physician.

2nd—Education of the laity.

3rd—Social service to follow up and uncover foci of infection.

EDUCATION OF THE PHYSICIAN

Post-graduate demonstrations are unquestionably the best method of imparting to the general practitioner the special knowledge required to successfully treat the great majority of the patients applying for relief from syphilis, gonorrhea, chancroid or malignant granuloma. For the purpose of imparting the essential information, the State Department of Health should retain the services of an expert in the diagnosis and treatment of these diseases, who should be available for consultation with any reputable physicians in the state, in need of advice. It would be hoped that on such occasions we could impress upon the physician the necessity for early diagnosis and its importance in preventing neuro-syphilis, a fact which has already been taught during the post-graduate demonstration.

It would not be beyond our hope to teach even those physicians in remote sections to collect serum from an ulcer properly and possibly to do the dark field examination themselves in the case of the better prepared or properly equipped men. Or, if the facilities were not available, at least every county health unit should be equipped to do this work. For this early period, the first four to six weeks, when the Wassermann or Kahn is usually valueless, is potentially the period of greatest danger for the luetic subject, often causing him to refuse treatment because of laboring under the false security of a "negative blood test." It is just at this time when intensive treatment is most effective that the greatest security against circulatory or nervous involvement can be obtained.

For the same reason, every physician licensed to practice medicine should know how to collect spinal fluid for examination. A simple procedure like a spinal puncture should not be made to take on the aspect of a major operation. This service must be available at least at every county seat. You can't treat syphilis properly without it. Of course, if Swift and Ellis treatment or malaria inoculations are indicated, hospitalization becomes absolutely necessary.

During the World War it was my duty to instruct many of the "run of the mine" doctors in the measures I have mentioned, together with somewhat more difficult procedures concerned in the treatment of the posterior urethra due to gonorrhea. It was really remarkable to observe the facility with which they mastered these rather trying procedures.

This service rendered by the State Health Department is very much less expensive than maintaining free clinics at strategic points throughout

the state and serves the purpose of training general practitioners in the latest approved methods. When the physician is paid a small fee by the state and supplied with arsenicals, bismuth and mercury, the cost is probably less than the maintenance of clinics. Besides the infected individual is spared the time and trouble of traveling to and from the clinic and is more apt to report regularly for treatment, increasing thereby his chance of recovery. Again, the physician is pleased and gives full cooperation in removing infected foci in his community.

Regular letters from the Health Department inviting all physicians to avail themselves of the service are forwarded after putting the matter before the State Society and contacting county medical societies.

EDUCATION OF THE LAITY

The belief that information relative to the venereal diseases is taboo is not in my opinion correct, if such information is sensibly and discreetly presented. I think that people with any judgment at all, both men and women, are alive to the need of a sane program for imparting to adolescents under their care the facts concerning the social diseases.

As previously stated, I do not subscribe to the view that spectacular or dramatic methods are needed for the purpose. I am of the opinion that a quiet simple statement of facts with no mention of penalties is the best way to approach youth. We must forever keep in mind that they are not restrained by fear nor are they to be browbeaten—these modern youths of the 1934 model. They are much better educated and possess greater poise than we did at their age, and I have learned to admire their frankness and honesty. These youngsters, boys and girls, are amenable to reason but adamant against coercion. When you have explained the simple facts in regard to the venereal disease problem, the present generation will give you respectful consideration and will act according to their opinion of the merits of your case. The best way then in my opinion is to give talks, not lectures, to organized groups, both male and female. It will do no good to do this occasionally—it is necessary to talk regularly and frequently over a long period of time.

High school pupils, teachers and parent-teacher organizations form a very intelligent group, through which knowledge upon the subject is disseminated to less fortunately situated people. Church organizations, Women's Clubs, and civic bodies, like Rotary and Kiwanis and Lions, are all very progressive and anxious to hear intelligent speakers upon any constructive subject. These meetings should be well advertised and made attractive in various ways. Illustration by means of slides is helpful but for Heaven's sake don't use dime museum or sob story stuff. Conservatism is more fruitful of results.

These lectures together with selected literature upon the subject, regularly distributed throughout the state by the Bureau of Venereal Diseases, can be depended upon to bring results in reducing the frequency of infection and of curing foci. The idea is to prevail upon them to seek proper advice through informed channels. No cavalcade, bearing wax models of loathsome disfigurement, no ballyhoo, just plain facts.

SOCIAL SERVICE

In case of flagrant violators of regulations or carelessness in presenting themselves for treatment, a follow-up system is essential in any plan of venereal disease control. Where cooperation cannot be obtained by patient reasoning and explanation, it is necessary to demand compliance by compulsion. For this work, social service workers notify the delinquent and in case the notice is disregarded a personal visit is made, when the necessity of regular and sufficient treatment is stressed, calling attention to the infected individual's relation to the rest of the community as well as to his own welfare. If, in spite of all warning, the person continues to be lax or careless in his behavior or in applying regularly for treatment, then and only then is the law enforcement officer brought into the case.

Such are my views after twenty years devoted to this work in connection with the U. S. P. H. S., the Virginia State Board of Health and in the Social Service Department of the E. I. duPont de Nemours Company. Lastly, I wish to state apologetically that I believe the best work for the prevention and cure of venereal diseases has been done outside of organized medicine. A resolution was offered at the Norfolk meeting of the Medical Society of Virginia in 1930, by Dr. Dudley C. Smith of the University of Virginia, which was duly seconded and approved, advising a cooperative effort by the De-

partment of Clinical Education of the Society and the State Board of Health in evolving a program for the better handling of the venereal diseases. I have heard of no action having been taken toward fulfilling the purpose of the resolution. In the meantime, the honor for consistent persevering and effective progress in the solution of this very important problem goes to the American Social Hygiene Association. I hope by coordinating the efforts of this active organization and the Medical Society of Virginia, that the State Health Department will initiate a live campaign under the Bureau of Venereal Diseases to the end of lessening and finally removing this scourge entirely.

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THE RELATION OF SYPHILIS TO HEART DISEASE.*

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I wish that I might tell you in honeyed words how very deeply appreciative I am of the invitation extended by your Chairman to address you at this time upon some phase of heart disease; but the truth is that I am not appreciative. For upon a certain night in last August, when the heat was most oppressive and those unprotected by window screens were the prey of the mosquito (even then, however, we heard an occasional canto), the telephone bell rang and the call was answered by a very sleepy and tired medical man. To the invitation extended by the Chairman all sorts of pleas and excuses were duly offered, but the voice at the other end of the wire was unwilling to entertain a refusal. Accordingly, I am here before you. If, therefore, this communication should prove dry or uninteresting, the blame must rest upon the Chairman. If, on the other hand, there be aught of merit or any little excellence, the speaker will not refuse to take unto himself any little praise, even unto the "nth degree."

I am reminded, as I grow older, that it is among the ordinary things of life that we live and dwell. So, while it would be of more than passing interest to present to you some extraordinary patient, to exhibit some extraordinary malformation of the heart, or to write a paper upon some extraordinary topic, it must be recognized that any one of them would prove in the long run more or less ephemeral. Accordingly, I have selected as my subject "The Relation of Syphilis to Heart Disease," for I feel that a review of this will be of interest to all and that a free discussion will add materially to the knowledge of the speaker as well as to that of his hearers. Syphilitic heart disease is, with the exception of hypertonic heart disease, the most common type of cardiac disorder in our own locality. It is with us and always will be. Dodge it as we may, it re-appears upon all occasions. We cannot evade the issue.

Then, too, I am also reminded that if syphilis is no respecter of persons, syphilitic heart disease is no less so. No class of society is immune. I have found syphilitic heart disease among the clergy, the legal profession, merchants and other business men, and, I regret to say, among many of the members of our own profession. A sociological, as well as a medical, question thus arises. The cases of elderly ladies, who have been innocently infected, and of the children of syphilitic parents, these also present a problem, though it must be confessed that congenital syphilitic heart disease is quite rare. Yet the problem remains. Of course, we of the South are more than familiar with syphilis in the Negro, but it is of the syphilis occurring among the educated members of the white race (and especially among those high in the social, political and business worlds) that our greatest problem arises. To this I would call your attention, for education has apparently had little or no effect upon the spread of the scourge. Will further education, preventive medicine, improved hygiene, or even economic and sociological measures have a tendency to prevent its ravages?

The history of syphilis and its spread over continental Europe and Great Britain is quite as romantic as the most captivating novel. According to

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most writers, the followers of Columbus contracted the disease from the Indians in the Island of Espanola or Hayti. Returning to Spain they introduced the disease. A little later Charles VIII, of France, decided to invade Italy. Accordingly, he amassed an army, among whom were large numbers of Spanish hirelings and the usual camp followers or ladies of pleasure. He laid siege to Naples in 1494 and it was here that the first appearance of syphilis on a large scale appeared. From Naples it gradually spread over Europe, reaching the Netherlands, Russia and the British Isles. At first the scourge was called the French disease, or Spanish or Italian disease, or what not. It was not until 1530, when Francastoro published his poem on "Syphilis sive Morbus Gallicus," that the present terminology was adopted.

This account, however, is denied by some. They even maintain that syphilis was present in Europe in a mild form before the departure of Columbus and that his followers introduced it into the West Indies, where it was grafted upon a new soil. Upon their return to Spain there followed a re-introduction into Europe. There are some, also, who would contend that syphilis is mentioned in the Bible. They refer to the declaration in the Decalogue that the sins of the fathers are visited upon the children, to the various descriptions of the sufferings of Job, to the admonitions of Solomon in his Proverbs and to other passages in the Book. But no authentic syphilitic fossil remains have been discovered in Europe of an origin prior to 1492. Nor have any syphilitic fossil remains been discovered in America of a pre-Colombian origin. To quote Hrdlicka, of the National Museum: "The bones of ancient Egyptians and similarly those of the old peoples in Asia Minor show nothing that could be definitely diagnosed as the disease in question." In a lecture before the American College of Physicians in 1932 he suggested that syphilis had existed in a mild form among the American Indians (not sufficient to leave any bony traces) and that it was acquired from them by the followers of Columbus and planted upon a new soil. Be all this as it may, however, the definite birth of syphilis, as we now know it, was during the siege of Naples in 1494.

I have often wondered why in some individuals syphilis manifests itself in the osseous system; why in others the nervous system, and why in still others the heart is affected. I have often wondered if there are not several strains of the spirochete, even as there are of the streptococcus. How else can we explain this selective action? Then, too, why do certain races respond one way and some another? To give just one example: why is syphilitic heart disease so very prevalent in the Negro; yet the parasyphilitic diseases so comparatively rare? Or, again, while no part of the body is immune, why are some syphilitic lesions so infrequent? Personally, although I have seen many cases of gastric disease, I have seen only one that I can conscientiously consider as true gastric lues; equally true is the question of lung syphilis; syphilis of the bladder is almost a pathological curiosity. And, in conclusion, why is it that often only selected spots of a given system are attacked? Is this due to the resistance of the other parts of the system, or has a certain strain of the spirochete a certain affinity for a certain part?

This reasoning is particularly applicable to heart disease, for, while syphilitic myocarditis is fairly frequent, syphilitic heart disease is almost always limited to the aortic valve and to the portion of the aorta just above it. Thus we may have aortic regurgitation, aortitis, aneurism of the aorta and coronary occlusion. Like the rheumatic bacillus, there is a selective action, for, while aortic stenosis is usually due to rheumatic infection, and coronary disease may be due to this as well as to hypertension or syphilis, the rheumatic bacillus seems particularly selective of the tissues surrounding and composing the mitral valve. It will also be observed that both rheumatism and syphilis are partial to the left heart. Formerly we were taught that gonorrhœa selected the right side. But, be this as it may, it will be observed that in general syphilitic heart disease is confined to the tissues adjacent to the aortic valve and aorta and that the damage resulting to the mechanism of the heart is directly due to mechanical changes produced by the primary lesion.

An insufficiency of the aortic valve will naturally be attended by a leak, for which nature must compensate; otherwise, the heart will fail. There thus results an enlargement of the left ventricle with a consequent hypertrophy of the cardiac muscle. Similarly, there must be some increased resistance of the chordae tendineae and the tissues comprising the mitral valve. Hence, an enlargement of the heart to the left side will be noted. Aside from the murmur to be heard over the aortic area and

elsewhere, a murmur diastolic in quality, little circulatory trouble will develop as long as the compensation is reasonably complete. But let the advance of the disease continue and we may expect a secondary invasion of the mitral valve and all of the ills resulting from a failure of the heart to do its duty.

Often, however, the part affected is not the aortic valve but the aorta itself. A distinct enlargement will be observed; to what extent is a problem, for, while a congenital enlargement is quite possible, the enlargement due to a syphilitic invasion must be differentiated. In general, we feel that a cross section greater than six and a half centimetres in diameter is pathological, although there are some who teach that a cross section as great as eight centimetres may be normal. At times the intima of the aorta is attacked and gives way, leading to a weakening of the wall and a diverticulum, which gradually enlarges with the production of a sac or aneurism, the portion of the aorta involved being usually the ascending portion and arch, though the descending portion, the innominate, the carotids and the subclavians are by no means immune. Nor are these sacs to be considered as simple diverticula, for often secondary ones develop. Some of them become enormous and press forward upon the chest wall with a bulging of the sternum, the so-called dissecting aneurism; some press upon the recurrent laryngeal nerve, with the development of a hoarseness; some press against the œsophagus and prevent swallowing.

To my own mind, however, the genesis of a coronary occlusion is the most interesting of the many lesions which may be due to syphilis, though no one would claim that all cases of coronary occlusion are due to syphilis, as hypertension and rheumatism probably claim the greater number. Primarily we are dealing with a gummatous lesion which involves the mouth of one or both coronary arteries. Now, as the function of the coronary arteries is to supply the musculature of the heart with blood, it is easy to see the results which follow a complete or partial occlusion of the vessel. There will follow a certain amount of necrosis with an impairment of the function of the heart, an increase of the sound musculature, an attempt to compensate, so that the heart may continue to carry on its work, and a final effort to develop a collateral circulation. An anoxemia usually results. Clinically we have a severe substernal pain radiating down the left arm (though sometimes the patient only complains of an indigestion), a feeling of suffocation and often a sudden exodus.

This brings up the question as to what is the nature of angina pectoris. If a heart definitely affected with coronary disease is percussed or placed under the fluoroscope an enlargement to the left will often be noted. But not so with a heart only affected by an angina pectoris. Yet many of the clinical symptoms are the same. There is, however, no enlargement of the heart in the case of an angina pectoris, nor are there any objective signs. According to Heberden and his followers, there is no pathology that is demonstrable in a case of angina pectoris; in general, it can only be diagnosed by the history, an observation of the actual attack and a response to the nitrites. Further, it has been observed that angina pectoris seems limited to the more nervous and educated individuals of the white race. Lately, however, Lewis and his adherents seem to feel that angina pectoris is in some way akin to coronary thrombosis and even go so far as to consider its etiology as a syphilitic one. This question we shall not attempt to decide and shall leave it to the pathologists and other investigators.

If the etiology of syphilitic heart disease is interesting, the clinical examination is no less so. To the questions asked our patients as to why we are consulted, all sorts of answers will be given: palpitation or heart consciousness, difficulty of swallowing, swelling of the feet, dyspnœa, dyspepsia, pain, etc. But it is upon the direct observation that the diagnosis must rest, observed phenomena varying, of course, with a varying etiology. Thus, in aortic insufficiency we may expect to find a definite diastolic murmur, best heard over the aortic area, or to the right of the sternum and in the second interspace. We shall also find an enlargement of the left heart. Further than this, an early and well compensated case is likely to give no details. As time goes on, however, signs of a failing compensation will be observed, signs of a mitral insufficiency, swelling of the feet or legs, pulsation of the veins of the neck, an inability to work, difficulty in breathing, œdema of the lungs, etc. Similarly, a pure aortitis or early aneurism is likely to be overlooked. The physical signs are most deceptive, for the area of dullness as observed by the percussing finger is due to the encroachment of the aorta upon the ster-

num. When we deal with the symptom of pain, however, a careful examination of the history will be required in an attempt to differentiate the type of pain. Are we dealing with neuro-circulatory asthenia, angina pectoris, or coronary occlusion? This often will tax the ability of the clinician to the utmost and make him search for all available information. Personally, I feel that our patients should be encouraged to tell their stories unaided so far as we are able; for, as I have said upon many occasions, a skilful questioning is apt to elicit any history, which the questioner may desire.

If we will study the excellent book of Vacquez and Bordet or that portion of Assmann's Roentgen Diagnostic Clinic of Internal Medicine dealing with the heart, we shall be led to feel that the lesions of the heart may be entirely diagnosed by the shadow as cast on the roentgen screen or plate. But, when their teachings are sifted down, it must be confessed that only the "stair step," which will be found over the area of the left auricle, is diagnostic. This, when found, is to be considered as pathognomonic of mitral stenosis. Aortic stenosis will produce an enlargement of the left ventricle as well as an aortic regurgitation. Mitral regurgitation also is attended by an increase of the size of the left ventricle, though theoretically we may look for an accompanying enlargement of the right heart. In any case, an enlargement of the heart may be noted due to an hypertrophy of the cardiac musculature as well as to the enlargement of the left ventricle. This enlargement also often accompanies a coronary occlusion, for, as we have said above, an attempt will be made by nature to overcome the difficulty caused by a local necrosis and to establish, if possible, a colateral or compensatory circulation.

It will be noted that I have made no reference to the technique of the roentgen examination. Two schools of thought exist. One, the Continental or Viennese method, dwells upon the fluoroscope and employs the orthodiagraph, for they claim that the resulting tracing has no diffraction. The method is in many cases eminently satisfactory, for it correctly portrays the size and shape of the heart and of the great vessels. Further, it has the advantage of being inexpensive (I am told that poverty in Vienna has produced a scarcity of roentgen materials), but I would impress upon you that this method is time-consuming and attended by some danger upon the part of the examiner. The teleroentgenogram, on the other hand, will certainly give us a slight increase in the size of the shadow, but it gives us a permanent record, is attended by none of the dangers of the fluoroscope and completely eliminates the personal equation. An œsophagram will tell us whether an enlarged arch or aneurism is pressing against the œsophagus. It must be added, however, that in X-ray examinations both methods must be used, for, when the enlargement of the aorta is observed, as in the case of an aneurism, a diagnosis of tumor may be made. More especially is this true when a blood clot has formed in an aneurism and the pulsation is limited or obliterated.

It will be likewise noted that I have not gone into great detail in regard to the physical method of examination by percussion. I do feel that this method is most valuable; in fact, it is one of the most valuable methods that have been added to our methods of diagnosis. But it must be confessed that it is not often possible to make the same interpretation by the method of percussion as with the fluoroscope or roentgen plate. Hence I would urge upon you the combination, or, in other words, the routine employment of one of the roentgen methods. Similarly, I would urge upon you the checking up of all murmurs by the roentgen method, for murmurs at best are often most deceptive. I have seen many failures by our best men. Personally, I am of the opinion that no murmur is of any great consequence, unless it is attended by some change in the shadow of the heart, as observed upon the roentgen screen or plate, but this phase of the question is open to the fullest discussion.

Likewise, it will be noted that nothing has been said in regard to the Wassermann or other serum tests in syphilitic heart disease. While, theoretically, all cases of syphilitic heart disease should give a positive Wassermann reaction, those who have done large amounts of blood work and are familiar with the subject, tell us that we may expect negative results in a certain number of cases and that a positive diagnosis must be made by other means. Fortunately, in general, the findings are so positive that the Wassermann test is unnecessary. Such is the case in aortic regurgitation, aortitis and aneurism. These must be considered as syphilitic until proved otherwise, even as an apical pulmonary lesion must

be considered as tubercular. It is well also to consider that syphilis may exist and give a strongly positive Wassermann reaction, while a co-existing heart lesion is due to other causes. Here, especially in the case of a coronary occlusion, a number of opinions may exist. The fullest co-operation of all methods of examination is necessary.

Nor have I mentioned the use of the electrocardiograph. It is, as you know, an instrument that will correctly record and subdivide the heart-beat and the only instrument that will give us any knowledge in regard to the integrity of the heart muscle. I wish that a routine electrocardiogram could be had of every cardiac patient, even as a roentgen and Wassermann examination, for often unsuspected lesions are brought to light. In the case of syphilitic heart lesions its use is especially important, for, although there are those who claim that they can diagnose valvular lesions by this means, it is the varying changes produced in cases of coronary disease (I refer to the inversion of the T-wave) that will aid us most. We may definitely differentiate between angina pectoris and coronary disease. Nor would I discourage the use of the sphygmomanometer, as a syphilitic hypertension is most frequent, likewise, with the palpation of the radial pulse. No one of these can definitely diagnose syphilitic heart disease, nor all three together, but their intelligent use will help us very materially in our final opinion.

To go into the prognosis of syphilitic heart disease in a lengthy way is not the object of this paper. We are all acquainted with the fact that, as the lesion progresses, we may expect a proportionate failure of compensation in an aortic regurgitation, a possible rupture of an aneurism, or, in case of coronary disease, a sudden death. Yet we all know of cases where a useful life has been prolonged and death has been due to causes other than syphilis. Especially is this true in the case of many physicians. One in particular, whom I knew well, had an extraordinarily large aneurism, but in spite of this handicap he attended to a large practice, especially abounding in obstetrical work, and died of a gouty diathesis. Similarly, I may say that I recently saw in consultation a minister of the gospel, an ex-army chaplain, who had served many rural churches in North Carolina. He had become ill; the pain and discomfort attending a coronary occlusion had rendered him no longer fit. But he had done his work well. Likewise with the other professions and laborers. So, if the question of prognosis in regard to syphilitic heart disease be asked, we must reply that as long as the individual is not disturbed by the lesion, he should be instructed to take care of himself and a moderate amount of exercise should be allowed. When, however, the compensation begins to fail, we may look for a rather rapid decline and death. No one can speak with certainty in answer to the time that our patient may survive; but, in general, a warning must be sounded and the exodus awaited.

Nor it it my intention to discuss in detail the treatment of syphilitic heart disease. Suffice it to say that here again there are two schools of thought. There are those who would claim that there is little or no use in treating the lesion as such, as the damage has been done; that further damage is not likely to follow; that the lesion belongs to the third stage of syphilis, and is, therefore, not contagious. Personally, I would freely acknowledge the almost utter hopelessness of trying to render a moderately aged or elderly person either Wassermann or symptom-free (this particularly applies to the case of elderly ladies, who have become innocently infected), but I have felt that something may be done and have freely administered the iodides (or, if you please, the familiar saturated solution of potassium iodide), as I have felt that the administration of the arsphenamines was probably too strenuous. In almost every case I have been rewarded. There are those, on the other hand, who would endeavor to cure the patient. Personally, I have felt that the course as advocated by White, of Boston, was the correct and sensible one. He advises a course of antisyphilitic treatment once a year, the kind of treatment to be determined by the character, age and condition of the patient. I have often asked the question as to whether a heart lesion may be definitely prevented by an early or moderately early treatment of the second or third stage of the disease, or whether the use of the arsphenamines has had a tendency to decrease the incidence of syphilitic heart disease, but the authorities differ so radically that I shall refrain from quoting any.

Such is essentially the history, etiology, diagnosis, prognosis and treatment of syphilitic heart disease. Syphilis as a scourge has been among us since the end of the fifteenth century, or a little over four hundred years. Yet its victims number many millions.

It is now among us and is likely to stay indefinitely. Like all great pests this one has been spread by education. Beginning with the conquest of the New World by the peoples of Europe, syphilis has manifested itself among the Caucasian race. Similarly, the discovery of Asia by the followers of Vasco de Gama and other travelers seems to have introduced it among the Orientals, though this origin is denied by some. Certainly education and discovery have introduced the pest among the peoples of Africa. The Negro race is the last to become infected. We have shown that, as syphilis seems to be selective, there is, apparently, a selective action upon the heart. As this selective action is also hyper-selective, the portion of the heart in general selected is confined to the aortic valve, the aorta and coronary arteries; that it is the development from these foci that produces the enormous hearts and aortas that we so frequently find. We have also shown that the examination must be made by all the means at our command, by the history, the symptoms, the physical examination, serologic methods and the instruments of precision. We must repeat that, of all of our senses, that of sight is the most acute. Hence the employment of the roentgen screen and plate. We shall also employ all indirect means. We shall employ the electrocardiograph and the sphygmograph. We have reviewed the prognostic aspect of the problem of syphilitic heart disease. We have touched upon its treatment.

We have, however, said nothing in regard to the economic losses due to syphilitic heart disease; of the loss to the State and society; of the great tax on the community, the hospital and organized charity. Truly, the amount of human wastage and loss of productive power is appalling. Measured in money or in the cost of hospitalization, the loss is equally prodigious. Can any or all of this be prevented? This is our problem. Once upon a time we used to consider typhoid fever, tuberculosis and syphilis as the great triology, the three greatest factors that were devasting and killing the human race. Thanks to education, improved hygiene and vaccination, the scourge of typhoid is almost eliminated. We need only compare the great number of American soldiers lost by the disease in the Spanish-American War with the relatively insignificant infection from this source in the World War. Similarly with tuberculosis. Education, improved hygiene and an early recognition of the disease have almost resulted in its control. Can we hope that more education, improved hygiene, prophylaxis and moral suasion may, likewise, control the curse of syphilis? No one can expect a utopia; but if each one of us will do his part toward the control of syphilis, a better and healthier State should ensue. "Then only shall wisdom cry aloud in the streets." "Then only shall we know the truth and the truth shall make us free."

Medical Arts Building.

ARACHNOIDISM ON THE EASTERN SHORE OF VIRGINIA.

W. CAREY HENDERSON, M. D.,
Nassawadox, Va.

Through the kindness of Dr. E. Holland Trower, of Eastville, Va., I was permitted to see a case of arachnoidism as reported below. On inquiry I found there had been fourteen other cases among my colleagues. The paucity of reports in the current literature suggested my making this report to the Physicians Journal Club of the Eastern Shore of Virginia.

T. H. T., a colored male, ten years of age, felt a sting on his shoulder while carrying a watermelon from the field. About thirty minutes later he was seized with severe cramping pains in his abdomen. Three hours later he was seen by Dr. Trower who made the diagnosis of arachnoidism, in spite of the insistence of the boy and his family that he had simply eaten too many grapes. He was given codeine sulphate gr. ¼ and sent to the hospital for observation.

On admission he still complained of pains in his abdomen and, in addition, severe pains in his legs. Examination revealed a board-like rigidity of the abdomen with little distention. His legs were a little stiff and very tender along the anterior tibial muscles. The pulse was 84 and absolutely irregular but of

fair quality. Temperature was 99.4, respiration 18. Reflexes not affected. History was not suggestive.

Laboratory work showed a hemoglobin of 95 per cent (T), red cells 3,928,000, leukocytes 11,000, of which 83 per cent were polys and 17 per cent lymphs. Urine was negative.

Treatment was instituted as follows: Morphia gr. 1/6 on admission, followed by a proctoclysis of glucose 1 per cent and soda 0.5 per cent.

Twelve hours after admission his pains were much less, though he had vomited three times in the interim. Rigidity was less. Symptoms and findings gradually became less until his discharge at the end of thirty-six hours.

On reference to Dr. Peple's report in March, 1930, and Dr. Vaughan's report of two cases in March, 1931, both in the VIRGINIA MEDICAL MONTHLY, I found that all cases follow an identical train of symptoms, but with variations in intensity.

Specimens of the "black widow" spider have been found in numerous cases reported to me by my colleagues on the "Shore."

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.

President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.

Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.

Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Greetings from State President.

As 1935 has arrived, let us pause to take an inventory of ourselves as physicians' wives. Have we fulfilled our duties? Let us resolve to devote our energy towards promoting acquaintanceship among physicians' families that the spirit of fellowship may increase. Let us endeavor to build faith in this profession by being ardent members of the Woman's Auxiliary to the Medical Society of Virginia for surely we can become better for it by infusing our own character with the virtues reflected from this noble calling.

I trust that you will realize that it is a privilege to belong to an Auxiliary to a profession which has the approval of all mankind. We ask your encouragement by helping to increase membership.

Those of you who attended the meeting in Alexandria I hope were stimulated by the report of the various groups to devote your attention to the problems of organizing where it is needed and to direct your energy toward improving Auxiliaries already organized.

To members and friends permit me to say that to you I shall be indebted for whatever success we may attain together. You shall be my inspiration and my stimulus. Without you my efforts shall be feeble, the results unprofitable. May I add in behalf of the administration, that constructive criticism and helpful suggestions will be welcome.

Our chief purpose is to maintain the standard and broaden the scope of our work and in this we ask your full understanding and hearty cooperation.

I am grateful for the privilege and honor you have bestowed upon me and trust that I shall merit your confidence.

May the coming year bring you and your families a full measure of health and happiness!

(MRS. JOSEPH) KATE C. BEAR.

The Woman's Auxiliary to the Richmond Academy of Medicine

Entertained at tea, Friday afternoon, November the 9th, at the home of Mrs. Lee E. Sutton. This was given in honor of the wives of the Richmond doctors and was held in place of the November meeting of the Auxiliary. The guests were received by Mrs. J. B. Stone, President of the Auxiliary, Mrs. Joseph Bear, President of the State Auxiliary, and Mrs. J. B. Dalton, one of the past Presidents of the local organization.

The reception rooms were beautifully decorated with chrysanthemums and other fall flowers, yellow, green and white being the predominant colors. Mrs. J. Allison Hodges and Mrs. Ramon D. Garcin presided over the tea table, which had as its centerpiece a bowl of yellow and white chrysanthemums and four candlesticks with yellow candles tied with bows of green.

Mrs. T. B. Washington, as chairman of the entertainment committee, was ably assisted by Mrs.

Charles P. Mangum, Mrs. J. O. Fitzgerald, Mrs. F. J. Wampler, Mrs. E. T. Gatewood, and Mrs. A. G. Shetter.

The party was genuinely enjoyed by the many ladies present and was a pleasant way for the wives of Richmond doctors to really become acquainted. It is hoped to repeat the occasion.

This organization met on the afternoon of December 14th at the building of the Richmond Academy of Medicine, at which time an interesting address was given by Miss Sarah Hartman, on the subject of "Mental Hygiene as Applied to Children." Miss Hartman is a member of the staff of the Children's Memorial Clinic of this city, and her discussion was exceedingly interesting and helpful.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during November, 1934, showed the following cases compared with the same month in 1933:

	1934	*1933*
Typhoid and Paratyphoid Fever	32	50
Diphtheria	350	452
Scarlet Fever	533	650
Measles	620	143
Meningitis	8	2
Poliomyelitis	4	2
Rocky Mountain Spotted Fever	0	0
Typhus Fever	1	0
Undulant Fever	2	1
Tularaemia	4	7
Smallpox	0	1

VIRGINIA INFANT MORTALITY—1933

As recorded by W. A. Plecker, M. D., State Registrar

The New Zealand vital statistics department reports a marvelous decline in their infant death rate during the past ten years from 40.23 in 1924 to 31.64 in 1933. However, in 1932 their infant death rate was 31.22. Can it be that the low standard set for the world during the past two decades has at last reached rock bottom and the rest of us know just how far away our ultimate goal is?

In contrast to this, the Virginia infant death rate is rising, reaching a new high level in 1933 of 68.0, white 58.7, negro 89.4. Though the actual number of deaths in 1933 dropped from 3,667 to 3,499, the white drop being from 2,215 to 2,107, while the negro drop was from 1,452 to 1,392, the rate in 1932 was only 66.4. This increase in rate in 1933 is due to the great decline in the number of births from 55,245 to 51,460, the whites from 38,988 to 35,896, negroes from 16,257 to 15,564, the infant death rate being based upon the number of deaths under one year per 1,000 living births.

Of the total infant deaths 952 were due to premature births of which 913 were during the first month (neo-natal); injury at birth 228, 223 during the first month; congenital malformations 189, 122 during first month; congenital debility 253, 161 during first month; other causes peculiar to early infancy 91, of which 81 were neo-natal. Thus it is seen that these five groups, largely neo-natal, comprise 1,713 of the total infant deaths, while all other causes total 1,786 or only 73 more. An interesting observation is that while the other white neo-natal deaths largely surpass the negroes in totals and in rate, for congenital debility the negroes total 149 as against the white 104. If accurately classified, would not a considerable per cent of these be transferred to the total deaths of 94 from congenital syphilis, white 28, negro 66?

Respiratory diseases, totaling 433, white 203, negro 230, and those from diarrhea and dysentery, total 382, white 221, negro 161, constitute 815 or nearly one-half of all the deaths other than neo-natal.

There were 74 from whooping cough, 18 from diphtheria, 13 from measles and 3 from scarlet fever.

All other causes not mentioned above total 769, white 467, negro 302.

Let us consider this problem briefly from the standpoint of prevention. Dr. King, the New Zealand health officer, first attacked it by a drive to popularize breast feeding, teaching also the methods of overcomnig the various difficulties, or supposed difficulties, that at times arise in the performance of this natural function. This was done by nurses, lectures, newspapers, bulletins, and by securing the full cooperation of the medical profession. The radio was not then available. Deaths from the diarrheal, as well as from other diseases, were rapidly reduced, and the rest of the world stood off and watched the New Zealand infant death rate drop.

The deaths occurring in various time periods are shown in the accompanying table:

	Total Deaths Under 1 year		DEATHS AT AGE OF—											
			Under 1 hour		Under 1 day		1-6 days		7-29 days		Total under 1 month		1-11 months	
	W	C	W	C	W	C	W	C	W	C	W	C	W	C
Total	2,107	1,392	171	65	471	186	353	250	269	200	1,264	701	843	691
Male	1,179	777	80	33	292	98	212	145	149	106	733	382	446	395
Female	928	615	91	32	179	88	141	105	120	94	531	319	397	296

Of course other means were also employed. With the great improvement in sanitation and in bottle feeding made necessary by the growing unpopularity of breast feeding, the diarrheal deaths have fallen to a point where they are no longer the major problem.

Up to the present no marked success has attended the efforts to reduce the neo-natal deaths, if in fact any serious attempt at it has been made by the medical profession and public health workers.

The Bureau of Vital Statistics, though not having the means to prove it by statistics, has long held to the belief that the reports of the premature and congenital debility deaths, totaling 1,141 in 1933, concealed a large amount of congenital syphilis which might be discovered and successfully treated, especially by prenatal work.

This is the most difficult and costly undertaking facing the State Department of Health, and the funds may not be available in the near future for attempting it in any large way.

The physicians of the State, in cooperation with the State Laboratory in making Wassermann tests, may, however, accomplish much by beginning the study of their obstetrical patients as near the beginning of pregnancy as possible, discovering syphilis and other diseases when present and in administering prompt and adequate treatment. Much may be done also by advising as to food, habits, et cetera.

The greater strength of the female, which extends back into intrauterine life, is shown by this table, in which the ratio of male deaths is 127 to 100 female deaths during the first year. This point was demonstrated by Holmes and Goff at the Second International Congress of Eugenics in 1921. In England and Wales from 1841 to 1850, when the infant mortality was 153 per 1,000 births, the ratio was 122 male to 100 female deaths, but when the mortality in 1926 dropped to 70, the ratio of males to females increased to 134 to 100. In New York City when the infant mortality dropped to 56, the ratio of male to female deaths rose to 134 to 100. This selective mortality up to the fifth year still showed a ratio of 125 males to 100 females.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Abbott Laboratories
- Sulpharsphenamine—Abbott, 0.1 Gm. Ampules.
- Sulpharsphenamine—Abbott, 0.5 Gm. Ampules.
- Sulpharsphenamine—Abbott, 0.8 Gm. Ampules.

Wm. S. Merrell Company
- Diphtheria Toxin for the Schick Test, Diluted with Peptone Solution and Ready for use.
- Diphtheria Toxoid.
- Diphtheria Toxoid, Alum Precipitated (Refined).
- Typhoid Vaccine.

H. A. Metz Laboratories, Inc.
- Holocaine Solution 1 per cent.

Sandoz Chemical Works, Inc.
- Ampules Gynergen Solution 1:2000, 0.5 c.c.

G. D. Searle & Co., Inc.
- Tablets Procaine Borate and Epinephrine.

Sharp & Dohme
- Rabies Vaccine (Phenol Killed)—Mulford, 7 vials package.

Frederick Stearns & Co.
- Insulin Stearns, 100 Units, 10 c.c.

Ulmer Pharmacal Co.
- Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer), 5 c.c. vials.
- Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer) 20 c.c. vials.

PROPAGANDA FOR REFORM

Yeast Vitamin—Harris Tablets and Brewer's Yeast—Harris, Medicinal, Not Acceptable for New and Nonofficial Remedies.—The Council on Pharmacy and Chemistry reports that Yeast Vitamin—Harris Tablets and Brewer's Yeast—Harris, Medicinal, are marketed by the

Harris Laboratories, Tuckahoe, N. Y. Full-page advertisements have appeared in medical journals, containing claims such as: ". . . successfully used and prescribed in anemia, herpes infection, pellagra, ulcers, arthritis and diabetes." The claim that vitamin B may be used successfully in the treatment of diabetes is unwarranted. There is lack of evidence that yeast vitamin B, or any other known vitamin has any effect on the faulty dextrose utilization in uncomplicated diabetes. The claim that yeast is effective in the treatment of pernicious anemia appears to be an obvious misinterpretation of known facts and published data. The only clinically proved indications at the present time for the use of vitamin B (and its related fractions) lie in the so-called deficiency diseases of beriberi, polyneuritis, and, probably, pellagra. The conscientious practitioner would do well to adhere to the established armamentarium in combating such serious conditions as diabetes and pernicious anemia. Insulin and liver and stomach preparations are proved, whereas yeast has only the claims of a manufacturer to recommend it. Neither the trade package nor the accompanying literature contains any statement of potency, nor does the Council know of any published protocols on the assay of the products as purchased on the open market. The Council declared Yeast Vitamin—Harris Tablets and Brewer's Yeast—Harris, Medicinal, not acceptable for New and Non-official Remedies because they are marketed with no statement of potency on the labels; with names of diseases for which they are recommended appearing on the labels, and with exaggerated, unwarranted and misleading therapeutic claims. (Jour. A. M. A., November 3, 1934, p. 1378.)

Utilization of Vitamin A and Carotene.—Many factors ordinarily exert an influence on food materials on therapeutic substances in the intestinal tract, and absorption and subsequent utilization are to a great extent dependent on them. In an attempt to elucidate the reported difference between the utilization of vitiman A from butter and that from cod liver oil in the presence of liquid petrolatum, Dutcher and his associates (*J. Nutrition*, 8:269 (September), 1934), studied the behavior of the pigment carotene under similar circumstances. Groups of experimental animals were given adjusted quantities of liquid petrolatum together with various amounts of butter fat, carotene, cod liver oil and an extremely potent concentrate of cod liver oil. The observations made by these men are generally in accord with other observations made under somewhat different conditions. There is little doubt that vitamin A can be absorbed from the intestine despite the presence of liquid petrolatum. On the contrary, it was found that the pigment carotene, which usually accounts for the vitamin A potency in plants and plant products and which in the animal body is transformed to vitamin A itself, is absorbed from a solution in liquid petrolatum to little if any extent. Both carotene and vitamin A occur in butter and the relative quantities vary. Liquid petrolatum will therefore vary in its effect on different samples of butter. These studies emphasize the unique contrast in external behavior between two structurally related compounds which, once they are inside the body, behave identically. In practice, as has been pointed out, the usual manner of taking liquid petrolatum, i. e., apart from a meal, virtually eliminates the danger of loss of vitamin A or its precursor (carotene), by the mechanism here discussed. (Jour. A. M. A., November 17, 1934, p. 1540.)

Blood Building Claims in Advertising.—The Committee on Foods reports that the whole process of blood regeneration is complex, involving many factors that may be affected by pathologic or disease conditions as well as by adequacy or inadequacy of the diet in iron. Anemia may be due to an inadequate diet, but pathologic conditions are frequently involved. The Committee feels that anemia and blood regeneration are not appropriate subjects for advertising addressed to the public. Blood building claims, therefore, should be excluded from food advertising. (Jour. A. M. A., April 21, 1934, p. 1300.)

Ironized Yeast.—The Bureau of Investigation of the American Medical Association reports that the public has been made what the advertising men would call "yeast-conscious" by the extensive and intensive advertising of the Fleischmann product. The facts are, of course, that as a medicine, yeast has no important place except as a means of furnishing vitamin B, which ordinarily should be and would better be obtained from one's food. But the public is not aware of these facts, so that it is not surprising that, by plausible advertising, a "patent medicine," called Ironized Yeast, has been built up into one of the best sellers in the nostrum field. Ironized Yeast advertising is typical of the times. In the newspaper advertising of Ironized Yeast, skinny versus well-developed men and angular versus well-curved women are brought into juxtaposition with the object of showing how necessary a rounded figure—and therefore Ironized Yeast—is to achieve economic or social success or marital happiness. Ironized Yeast comes in a bottle of fifty tablets, costing $1—that is, the tablets cost two cents apiece. The public is urged to take from eight to twelve tablets a day for from two to three months; thus, at twelve tablets daily, the cost for three months would be $21.60. According to the Ironized Yeast advertising, the product is "made from specially cultured *brewers' ale yeast,* imported from Europe"—claimed in earlier advertising to be from Bass' Ale brewery—which, it is alleged, "by a new process is concentrated seven times." Further, this yeast "is then *ironized* with three kinds of strengthening iron." From the various analyses which have been made of Ironized Yeast, including that of the A. M. A. Chemical Laboratory, it appears that Ironized Yeast is essentially yeast with small amounts of iron and phenolphthalein. The concern which sells it has attempted to obtain testimonials from physicians by offering them a bottle of perfume and testimonials from the general public by the promise of a picture. The Ironized Yeast advertising

carries the impression that by taking the preparation, undernourished and angular women can in a few weeks' time (usually three), be transformed into examples of rounded buxomness, while skinny men, by the same method, can undergo a similar transformation. (Jour. A. M. A., May 19, 1934, p. 1697.)

Treatment of Amebiasis.—According to a group of investigators in California and another group in India, both widely experienced in the treatment of Amebiasis, Carbarsone (Lilly) is one of the most efficient remedies in this disease so far tested. However, many cases prove refractory to this as well as to the other remedies. Vioform-Ciba is claimed by the California group also to be high in efficiency, but this drug is said to be less effective than Carbarsone. The present consensus is that emetine should be used only to control the symptoms of severe acute amebic dysentery and in liver abscess (or amebic abscess of other organs). Acetarsone—N. N. R., is reported to be more toxic and less effective than Carbarsone. Good results have been obtained with Chiniofon—N. N. R. ("Yatren," "Anayodin") in sufficient dosage; this drug has been said to be less effective than Vioform, a closely related compound. Vioform has the advantage over Chiniofon that it does not cause diarrhea. However, clinical experience with Vioform has not yet been sufficiently extensive to determine its actual relative merit as an amebacide. Two brands of Chiniofon stand accepted for inclusion in New and Non-official Remedies, namely, that of G. D. Searle & Co., and that of the Winthrop Chemical Company. Whichever drug or combination of drugs is used, it must be employed in sufficient dosage over a sufficient length of time, with due regard to necessary rest periods to avoid toxic manifestations. The result should always be checked by careful and repeated examinations of the stool for Endamoeba histolytica. (Jour. A. M. A., June 23, 1934, p. 2134.)

Sweets in the Diet, Especially of Children.—The Committee on Foods reports that although sweets are wholesome and valuable foods when given their proper place in the balanced diet, they contribute few or none of the structural components required for good nutrition. Common concentrated sweets used to excess are harmful, especially in the case of children, so far as they impair the appetite for other highly necessary foods and lead to a reduced intake of milk, eggs, fruits, vegetables, meat and cereals. Food advertising that obscures the facts of good nutrition should be condemned. (*Jour. A. M. A.* July 14, 1934, p. 110).

Serum Therapy in Poliomyelitis.—Notwithstanding the total failure of statistical presentations to make a case for serum therapy in this disease, clinical observations almost universally indicate rapid symptomatic response to serum administration. There seems to be an immediate drop in temperature and improvement in symptoms that cannot be totally disregarded. These clinical results have been shown equally after both normal adult serum and convalescent serum, so that there seems to be little preference between these two types of serum. Reports on the use of serum for passive protection in epidemics are inconclusive. It will be difficult to evaluate the efficacy of a prophylactic agent in poliomyelitis on account of the low attack rate even in epidemics, and because there is no method of defining the susceptible group. More data and observation are needed before the final opinion can be given as to the value of serum treatment and prophylaxis in poliomyelitis. (*Jour A. M. A.*, July 28, 1934, p. 262).

A Poliomyelitis Vaccine.—A vaccine that seems to possess the likelihood of efficacy in the diagnosis and treatment of poliomyelitis is at present undergoing development in the Laboratories of the Department of Health of the City of New York. Influenced by the earlier work and also by the favorable results recently obtained with antigens inactivated by germicides in the prevention of other virus diseases, investigators have attempted to develop a new antigen against poliomyelitis. Using extraordinary precautions, the group in charge of these investigations decided to test out the antigenic properties on themselves before attempting inoculation of children with the antigen. Several members of the research group were injected with a vaccine prepared by adding formaldehyde to a suspension of material from the infected spinal cord. It is proposed, after testing the blood of those who have been inoculated to determine the extent of the immunity developed, to carry the investigations further, inoculating children against this disease. The vaccine will, of course, have been established as absolutely harmless by the injection into the members of the committee and also as to its efficacy by the studies that have been made on monkeys inoculated with virus following inoculation with the vaccine. (*Jour. A. M. A.*, July 28, 1934, p. 264).

Book Announcements

Allergy and Applied Immunology. A Handbook for Physician and Patent, on Asthma, Hay Fever, Urticaria, Eczema, Migraine and Kindred Manifestations of Allergy. By WARREN T. VAUGHAN, M. D., Richmond, Virginia. Second Edition. St. Louis. The C. V. Mosby Company. 1934. Octavo of 420 pages. Illustrated. Cloth. Price, $5.00.

In the second edition of Allergy and Applied Immunology by Warren T. Vaughan, printed by C. V. Mosby Co., one will find the essentials of Allergy of today plainly expressed as well as many recent views advanced. This book is adaptable to the layman's mind though is not tiring to the medical mind with the exception that there is considerable repetition from time to time.

In part two of the book will be found complete data on pollens that are factors in Allergy, not only

for this section but for the whole United States. Should one desire it, this compilation should prove valuable for reference.

In part three Dr. Vaughan has considered the food allergens and has listed them in accordance with their biologic families and changes. Also, he has suggested a method of group testing that is original and may prove a useful factor in simplifying the route to a complete "Test Study" of the Allergic individual in so far as food sensitivity is concerned.

The bibliography is complete and up-to-date and this book should be in the library of every physician that is interested in this type of work.

JOHN B. BULLARD.

Institutional Care of Mental Patients in the United States. By JOHN MAURICE GRIMES, M. D. Four Years a Staff Member of the Council on Medical Education and Hospitals of the American Medical Association. Published and distributed by the Author, 1816 N. Clark St., Chicago, Ill. 1934. Octavo of 138-xv pages. Cloth. Price, $3.00.

This is a valuable book for all those who may be interested in the psychopath and his care. The management of the insane is a long and interesting story. The insane have been considered as either divinely endowed or having demoniacal possession. They have been carted from shrine to shrine in the hope of cure, they have been chained in dungeons, they have been publicly or privately slaughtered, they have been both ridiculed and worshipped. The idea of institutional care grew out of monasteries in England, France and Spain in the fifteenth century. Bedlam, in England, was one of the first of these institutions and an idea of how poorly they were regulated can be gained by the fact that the word "bedlam" came to connote, "confusion worse confounded." And then something over one hundred years ago Pinel, in France, unchained the inmates of Salpetriere, but it was not until around 1840 that something like modern care was given these unfortunate people in institutions. About 1895 Weir Mitchell excoriated the superintendents of the insane asylums of the United States for not properly examining, classifying, studying and treating their cases and also for not making laboratory investigations and performing autopsies. Since that time conditions have vastly improved. One often hears about the increase in insanity, but the Encyclopedia Britannica says that regardless of epidemics and variations in habit, the proportion of the insane in the civilized countries of the world remain at about one to three hundred.

From a study of Dr. Grimes' book one realizes the vast strides that have been made in the last few decades and especially through the activities of the National Committee for Mental Hygiene started by Mr. Clifford Beers. One realizes also from Dr. Grimes' book that much yet is to be done, even though as he states that, "35 per cent of the patients discharged from a state hospital as recovered or improved are so discharged or paroled within three months." There are many wise statements in this book. For instance, Dr. Grimes says that "there are many thousands of insane who have never been institutionalized and never will be" . . . "to institutionalize and maintain in institutions all insane would involve impossible and almost inconceivable tax burdens. If a patient is a menace he is entitled to state care until he ceases to be so . . . if only a family nuisance the responsibility of his care rests with the family rather than with the taxpayers." Throughout the book one will find interesting statements and statistics in regard to state hospitals, state schools and colonies, county asylums, veteran administration hospitals and privately controlled sanatoria.

This book is not only valuable to psychiatrists but also to the social worker and the legislator; it is difficult, however, to get the social worker and legislator to seriously read these important works. The social worker and the legislator are all too often moved by wild suggestion, emotional appeal and silly ideas originating in their none too well ordered brains. One can only hope that Dr. Grimes' book will have a wider reading than one would anticipate.

BEVERLEY R. TUCKER.

Diabetic Manual for Patients. By HENRY J. JOHN, M. A., M. D., F. A. C. P., Maj. M. R. C. Director of the Diabetic Department and Laboratories of the Cleveland Clinic. Second Edition. St. Louis. The C. V. Mosby Company. 1934. 12mo of 218 pages. Illustrated. Cloth. Price, $2.00.

The ultimate result in the treatment of diabetes probably depends as much on the patient as the doctor. The physician can prescribe for the diabetic but only the patient, or some constant companion, can see that these regulations are carried out, and only through knowledge of the disease can the patient ever hope to regulate and discipline himself

to the best advantage for himself. It is for this purpose—the purpose of educating the layman who has diabetes—that this diabetic manual for patients is written.

The author goes into the nature of diabetes and its relation to infections, overeating, obesity, and inheritance. He lays particular stress on the point that while the disease is incurable, it is compatible with long life if the proper treatment is carried out. Emphasis is placed on rules to be observed by those who have to take insulin. The book also contains a well-written chapter on diabetic arithmetic. The complications of diabetes and their prevention are fully covered. Many recipes, food tables, and diagrams are included, thes being the chief manner in which this edition varies from the first.

Probably it will be stretching the truth to say that placing a diabetic manual in the hands of a diabetic and having him understand it is as important a part of the treatment as insulin, yet when we realize that the duration of the lives of many diabetics is in direct proportion to their knowledge of the disease, then it is doubtful if this statement is so far from the truth. At any rate the education of the diabetic is of primary importance. "Diabetic Manual for Patients" by Dr. Henry J. John is certainly as good as any book written with this purpose in view.

HARRY WARTHEN.

Spinal Anesthesia. Technic and Clinical Application. By GEORGE RUDOLPH VEHRS, M. D., Salem, Oregon. St. Louis. The C. V. Mosby Company. 1934. Octavo of 269 pages. Illustrated. Cloth. Price, $5.50.

During the past few years spinal anesthesia has achieved a remarkable degree of popularity and is being used by a large number of surgeons of varying degrees of ability, training, and experience. A demand has therefore developed for a book correlating the various phases of spinal anesthesia and giving in considerable detail the technic of its use. This book seems in large measure to meet this demand.

After a brief review of the history of the development of spinal anesthesia, there is a discussion of the relationship between the anatomy of the central nervous system and the various methods of inducing spinal anesthesia. The action of novocaine upon the various types of nerve fibers is discussed in considerable detail and the relationship between this and the various methods of production of spinal anesthesia is pointed out. The possible effects of spinal anesthesia on the cardiac and respiratory mechanisms are fully discussed, and the general indications and contra-indications for its use are considered. The technic of application of the various methods is clearly described and the advantages of the author's technic given.

There is considerable repetition and at times the author becomes over-enthusiastic, particularly in the discussion of the indications and contra-indications, but on the whole the book is well written and is recommended to any one interested in the use of spinal anesthesia.

I. A. BIGGER.

Library Books Available to Members.

The following are late additions to the Library, Medical College of Virginia. As with other volumes, these will be loaned members of the Medical Society of Virginia, the only cost being return postage:

Bye, R. T.—Principles of economics.
Carlisle, G. L.—Practical talks on heart disease.
Craig, C. F.—Amebiasis and amebic dysentery.
Daukes, S. H.—Medical museum.
Decade of Progress in Eugenics—3rd International Congress of Eugenics.
Deerforth, D.—Knockwood.
Elgood, C.—Medicine in Persia (Clio Medica No. XIV).
Ewing, A. W. G.—Aphasia in Children.
Fraser, F. R.—Principles of Therapeutics.
Greenman & Duhring—Breeding and Care of the Albino Rat.
Harmer—Principles and Practice of Nursing, 3rd ed.
Heilbron, I. M.—Dictionary of Organic Compounds, v. 1.
Hertzler—Surgical Pathology of the Female Genital Tract.
Hines, G.—Alfalfa Bill.
Kitchens—Definite Diagnosis in General Practice.
Maule, F.—She Strives to Conquer.
Melvin, G.—Building Personality.
Morgan—Keeping a Sound Mind.
Philadelphia Child Health Society—A Nutrition Program and Teaching Outline.
Reynolds, F. N.—Relief of Pain in Childbirth.
Richmond—Introduction to Sex Hygiene.
Stevens, A. A.—A Manual of the Practice of Medicine, 13th ed.
Transactions of the American Association for the Study of Goiter (1934).
Tucker, B. R.—The Lost Lenore.

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Editorial

Medical Signers.

Benjamin Rush, Physician and Citizen by Nathan G. Goodman purports to be the first extended biography of this remarkable Revolutionary physician from Pennsylvania. In the first paragraph of the preface we are told that "After examining countless letters, documents, and newspapers in evolving this full-length portrait of the only Doctor of Medicine to sign the Declaration of Independence I found that there emerged a man vigorous in mind and body, and heroic in stature."

It may be a small point, but in the interests of historical accuracy and in justice to the medical professsion which played no inconspicuous part in the struggle for American independence, attention should be called to the fact that five physicians, not one, signed the Declaration of Independence.

It is to be supposed that the medical profession of Georgia will want to remind Mr. Goodman of the fact that Lyman Hall (1731-1790) was a physician of that state and a Signer of the Declaration of Independence. He had graduated from Yale, studied medicine as an apprentice, and was a country practitioner before his election to the Continental Congress. After the war he returned to the practice of medicine in Georgia, and except for the interruptions occasioned by the confiscation of his property by the British and his election as Governor in 1783, continued in his chosen profession until his death in 1790.

It will no doubt occur to the medical profession of Connecticut that Oliver Wolcott (1726-1797), a Signer of the Declaration of Independence, Major-General in the state militia, member of the Continental Congress, and later Governor of the state, was also a physician, having after his graduation from Yale in 1747, studied medicine with his brother, Alexander.

New Hampshire has the most right to object to Mr. Goodman's incomplete information, because of the three Signers of the Declaration from that state, two were physicians. Josiah Bartlett (1729-1795) practiced medicine at Kingston, N. H., where in 1754 he gained some reputation by his novel treatment of "the throat distemper." In 1775 he was elected to the Continental Congress and signed the Declaration of Independence. Subsequently he became Chief Justice of the state and New Hampshire's first Governor. His interest in medicine

continued however, and in 1791 he was one of the founders of the New Hampshire Medical Society, being made its first president. Matthew Thornton (1714-1803), the other Signer from New Hampshire, after studying medicine, settled in Londonderry, and was a regimental surgeon in the expedition against Louisburg. He was elected to the Continental Congress in 1776, was later raised to the Supreme Bench of the state and ended his political career as a member of the state senate.

The Birth Control Ballot.

With this issue of the VIRGINIA MEDICAL MONTHLY a ballot on birth control is being placed in the hands of every member of the Medical Society of Virginia with the expectation that it will be filled out promptly and returned to the office of the MONTHLY where the results will be tabulated and subsequently published.

The subject is most important and is attracting widespread attention. The recent organization of the Virginia Birth Control League, initiated and sponsored by a group of prominent laymen, is a challenge to the medical profession of the state, the majority of which has up to the present time been content to stand upon the side lines and watch, more or less skeptically, the progress of a movement in which by temperament and training they have every right to take the leading rôle.

Assuming that the medical profession of Virginia can no longer fail to recognize the legitimacy of the claims of this movement upon their time and thought, the VIRGINIA MEDICAL MONTHLY has decided to conduct this poll. By such means as this it is believed possible to correct the extremes of thought which are usually vocal enough, but not necessarily representative of mass opinion, the trend of which is after all the only important issue. It is the hope of the MONTHLY that every recipient of a ballot will vote.

A Symposium on Medical Economics.

This issue of the VIRGINIA MEDICAL MONTHLY carries the papers read before the recent meeting of the Medical Society of Virginia at Alexandria on various features of our present economic problems. They are clear, temperate and exhaustive discussions of the subject, presented by members of the Virginia profession competent to speak, as well as by a distinguished guest. The MONTHLY is glad to publish these papers at this particular time because there is every evidence to show that the Washington administration is now seriously approaching the question of what is to be done on a large scale about the medical care of the American people. We all await with interest the report of the Committee on Economic Security, especially its medical aspects, and the action that is going to be taken on it by the next Congress.

It is of more than passing interest that one of the chief advisers to Miss Perkins and her Committee on Economic Security is Mr. Edgar Sydenstricker, Director of the Milbank Memorial Fund, a Virginian and the Society's recent guest speaker. Mr. Sydenstricker is not a radical. He believes in individualism. In a recent statement correcting a false impression of his position published in the newspapers, he refers to a conversation with a reporter in which, he said, "I impressed upon him with all the words at my command that I was *not* an advocate of state or socialized medicine."

Dr. Robert L. Payne.

The habit of electing Virginians to head sectional as well as national societies continues. In choosing Dr. Robert L. Payne, of Norfolk, as its next president the Southern Surgical Association has recognized the merits of one who has long been regraded in Virginia as a man of outstanding surgical attainment. The medical profession of his State extends the hand of congratulation to him.

Why Laymanize the Hospital?

Those sensing danger from the socialization of medicine will be interested in the following extract from the pen of Dr. J. K. Hall, which appears in the December, 1934, issue of *Southern Medicine and Surgery*:

> Direct and dignified inquiry made of the head of the United States Veterans Bureau in Washington about heading the new United States Veterans Hospital near Roanoke by a layman is said to be unanswered at the present moment. And here in Richmond there are reports that the office of the United States Veterans Bureau in Richmond is to be transferred to that new United States Veterans Hospital located out in the country some distance from Roanoke. It is rumored also that the Chief Officer of the Veterans Bureau in Richmond is to become the head or the General Manager of that new Veterans Hospital near Roanoke. But it is said to be impossible to obtain authentic and decisive information about these matters. And it has been rumored also that

the Congressman from the Roanoke district, whose influence was potent in bringing the hospital at Roanoke into being, will have a hand in selecting or designating the entire personnel of the new institution near Roanoke.

The physicians of Virginia have every right to feel deep concern about the quality of the service to be rendered by that hospital out from Roanoke. It is to be presumed that in the beginning at least of its activities most of its patients will be Virginians—the former patients of Virginia physicians. This is not only the right but it is the duty as well of the physicians of Virginia to concern themselves about the set-up of the new Veterans Hospital.

Why should a layman—any layman—ignorant of hospital management and untrained in medicine and in nursing, be placed at the head of an institution the function of which is to be the care of sick folks? Should not the authorities be prodded and harassed until that question be answered? Why should the office of the United States Veterans Bureau, for many years located in Richmond, the easily accessihle capital of the state, be transferred to the country in Roanoke County, in a remote and relatively inaccessible region of the state? Has the world Facility been added to the three words: United States Veterans, in order that a layman politician, ignorant of medicine and sickness and of many other things, may be placed at the headship of a hospital? Why does not the government speak of Post Office Facilities; of Treasury Facilities; of Army Facilities; of Supreme Court Facilities; of Alcoholic Facilities; of Senatorial Facilities? And if it be wise and expedient and Economic to head a United States Veterans Hospital hy a layman, even by a layman who may have been so steadily promoted that he may he now almost a Brigadier General, why is not a layman placed at the head of Saint Elizabeth's Hospital in Washington City? That is not only the largest hospital maintained by the United States Government; it is probably the largest hospital in the United States. If laymanization of United States Government hospitals is to take place, why not begin the plan right there in Washington City? And if such hospitals are to become Facilities why not apply that verbalization with all of its implications to Saint Elizabeth's, and place Dr. William Alanson White, the Superintendent, and all of the medical and nursing staff under the suzerainty of some politicalized layman? And if it be best for all reasons for the offices of the United States Veterans Bureau to be located in a United States Veterans Hospital then why not exhibit a fine example of that wisdom by transferring the headquarters of the United States Veterans Bureau from wherever it is in Washington City out to Saint Elizabeth's Hospital on the fringes of that city, but not so remotely in the country as the new hospital in Roanoke County in Virginia? And why should citizens be denied information about these matters? Are they to be prevented from having a voice in the doings of their own government even in their own state and with their own people?

The people in a democracy are, or should be, the government. From their pockets in the form of taxes come that substance which sustains and makes possible the continued biologic and political existence even of such high dignitaries as now exercise sway and dominion over the affairs of veterans and veterans hospitals. Veterans hospitals and veterans' bureaus are neither built nor sustained by government money. There is no such thing. It is as non-existent as reptiles in Ireland. The people, with their own money, make possible all these agencies that function under government episcopacy. Why should the members of the medical profession and other citizens of Virginia and of the United States stoop so low as to approach on their knees these Federal functionaries in an effort to find out what is going to happen here in Richmond and up yonder in Roanoke County? I dislike to think of a physician as a suppliant. Physicians should speak and not beseech. And since the money of the people is supplying all paraphernalie of the drama—both actors and equipment—why should not the people insist upon knowing whether a rabbit or a guinea pig is to be fetched forth from the hat, and when, and why, and by whom, and what for? If we can not find out these things we shall have to conclude that Bureaucracy has at last got down to its knitting here in the ancient Commonwealth of the late P. Henry and T. Jefferson.

Department of Clinical and Medical Education of the Medical Society of Virginia

Lecture Notes by Dr. Lapham Still Available.

The Executive Secretary still has on hand a number of sets of the mimeographed lecture notes of Dr. M. E. Lapham on the subject of Prenatal and Postnatal Care. Sets of these notes will be sent free upon request to members of the Society as long as there is a supply on hand. We regret that the requests for the lecture notes on Pediatrics by Dr. G. M. Lyon have completely exhausted the supply.

Meeting of the Committee on Clinical and Medical Education.

The Committee on Clinical and Medical Education met in the Society's offices in Richmond on the afternoon of November 26th. All members of the committee were present, including Drs. R. D. Bates, chairman; P. W. Miles, I. C. Riggin, G. F. Simpson, Lee E. Sutton and J. C. Flippin. The purpose of the meeting was to consider plans for carrying forward the Society's program in the field of postgraduate medical education

At the request of the chairman, the secretary gave a brief report on finances. This indicated a balance of $547.55 from the discontinued Committee on Prenatal and Postnatal Instruction, which sum, with the approval of the Commonwealth Fund, through whose help the work of the Committee on Prenatal and Postnatal Instruction had been financed, was authorized to be turned over to the Committee on Clinical and Medical Education; also, an estimate of $150 from the sale of the manikin and other supplies which became the property of the committee; and $250 appropriated by the Medical Society at its last annual meeting for carrying on its educational program—a total of $947.55.

Before discussing the question of procedure, Dr. Simpson reported most favorably on the results of the two-weeks clinic in Pediatrics, conducted in Leesburg during the late summer by Dr. George M. Lyon, of Huntington, W. Va. Dr. Simpson called attention to the apparent success of the general meeting with the public when Dr. Lyon discussed the purposes of the two-weeks clinic and the general features of the educational program that the physicians are carrying forward throughout the State. He suggested that if other courses are sponsored, steps should be taken to invite all the physicians in the teritory served to the first meeting. He recommended that sufficient time be allowed to plan carefully and thoroughly for the clinics. He emphasized the importance of selecting a clinician with practical experience.

At the request of the chairman, the secretary read the proposed program for procedure. This included at least two sectional two-weeks clinics in Pediatrics, two reading courses, cooperation with the Department of Medicine of the University of Virginia and the Medical College of Virginia in arranging and announcing their postgraduate clinics.

Pediatrics Clinics Planned

There was universal agreement that at least two clinics similar in character to that conducted by Dr. Lyon in Leesburg should be conducted in the subject of Pediatrics. A committee, consisting of Drs. Flippin and Sutton, was appointed by the chairman to cooperate with the Executive Secretary in selecting the clinicians. The committee voted to increase the fee for membership in the clinics from the original fee of $5 to $7.50. By this step it was hoped that funds received from fees would make it possible to conduct a third clinic in the course of the year.

The question of the communities in which the clinics might be conducted was discussed. Although it was decided that the final selections would have to be based on such factors as local interest, enrollment, etc., special attention was directed to the communities of South Boston, Petersburg, Suffolk-Franklin and Newports News in Southside Virginia; Christiansburg, Abingdon and Staunton in Western Virginia and Tappahannock in Northern Virginia. The committee felt that any community interest should be considered. However, it advised holding the first clinic which is planned for the month of February in Southside or Eastern Virginia, where weather conditions may be more favorable for a clinic at this season of the year.

Directed Reading Courses

The proposal to experiment with Directed Reading Courses received much attention. It was explained that the reading courses would be reading outlines, based on very pertinent literature which could be secured in inexpensive form on subjects in which the practicing physician might, for various reasons, be particularly interested. The idea of Directed Reading Courses was raised because the method is being adopted, apparently with considerable success, in other fields. After due consideration, the committee authorized the secretary to go forward with the preparation of two such courses. The subjects which it recommended for treatment were Obstetrics and Pediatrics. It urged that if possible Dr. Lapham's cooperation be obtained in preparing the reading course in Obstetrics and that

of Dr. Lyon in preparing the reading course in Pediatrics. The committee requested the secretary to prepare announcements explaining the general character of the reading courses and their purposes and to take opportunities to bring this experimental project to the attention of members of the society.

GEO. B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Richmond Academy of Medicine.

Following its scientific session on November 27th, Dr. J. F. Geisinger, President, presiding, the Academy honored four of its members who at this time hold presidencies in national medical societies: Dr. Robert C. Bryan in the American Association of Genito-Urinary Surgeons; Dr. Fred M. Hodges in the American Roentgen Ray Society; Dr. J. Shelton Horsley in the American Association for the Study of Neoplastic Diseases; and Dr. M. Pierce Rucker in the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. Dr. Stuart McGuire, himself the recipient of many national honors, extended greetings, congratulations and best wishes from the Academy. A brief response was made by each of the honorees. These exercises were followed by an informal reception and supper in the dining room of the Academy building.

At the annual meeting of the Academy on December 11th, the following officers were elected for the ensuing year: President, Dr. Frederick P. Fletcher, and vice-presidents, Drs. Austin I. Dodson and T. Dewey Davis. These officers will be installed at the meeting of this organization on January 8th. Mrs. Ralph Catterall is executive secretary of the Academy.

Roanoke Academy of Medicine.

On November 19th the first hospital meeting of the Academy was held at the Jefferson Hospital. Resolutions were presented and adopted on the death of Dr. Dexter P. Cannaday. The following program was presented:

Hydrocephalus from the Obstetrician's Viewpoint—Dr. George S. Hurt.

Common Intraocular Changes—Drs. Mortimer Williams and Wm. Fisher.

Bacterial Endocarditis—Drs. Geo. B. Lawson and White Burgess.

Management of Advanced Malignancies—Drs. Hugh H. Trout, A. P. Jones, J. G. Rennie.

Electrocardiography (Moving Picture) — Drs. John E. Gardner and L. C. Spengler.

Following the program light refreshments were served.

On December 3rd the third regular meeting of the Academy was held at the Elks Club.

Dr. J. L. Kinzie, Salem, Va., was elected to membership in the Academy.

The following scientific program was presented:

A New Method of Treating Fractures of the Leg—Dr. M. A. Johnson.

Pericardial Accumulations—Dr. J. D. Willis. Discussed by Dr. C. H. Bondurant.

Report of a Case—Dr E. G. Gill.

The next meeting of the Academy will be in January.

Dr. W. P. Jackson and Dr. Frank Helvestine, both of Roanoke, are president and secretary-treasurer, respectively.

The Southside Virginia Medical Association

Convened in Petersburg, Va., on the afternoon of December 11th. The meeting was called to order by Dr. H. C. Jones, of Petersburg, President, and opened with prayer by Dr. R. L. Raiford.

Dr. C. S. Dodd, of Petersburg, reported a very interesting case on Tracheal Diphtheria, and Dr. D. D. Willcox, also of Petersburg, reported a very unusual case of Astigmatic Refractive Error. Dr. Morton Morris Pinckney, of Richmond, read a paper on Hormones. Dr. Meade Edmunds, of Petersburg, presented a paper on Pulmonary Abscess Following Tonsillectomy, and Dr. W. G. Crutchfield, of Richmond, read a paper on Acute Head Injuries. Dr. A. M. Wash, Richmond dentist, read a paper on Dental Conditions of Interest to Physicians. Quite a number of dentists from South-

side Virginia were present to hear this. There was a free discussion of all papers.

The following officers for 1935 were elected: President, Dr. S. E. Gunn, Hopewell; vice-presidents, Dr. Linwood Farley, Courtland; Dr. Moses H. Tredway, Emporia; Dr. Meade Edmunds, Petersburg, and Dr. Edward Joyner, Suffolk; secretary-treasurer, Dr. R. L. Raiford (re-elected) Franklin.

Dr. Lawrence P. Jones, of Emporia, was elected an active member.

After a delightful dinner the association adjourned to hold its next meeting on the second Tuesday in March, 1935.

The Eastern Shore of Virginia Physicians' Journal Club

Held its regular meeting in the Drummondtown Tavern, Accomac C. H., Va., November 13th. Those present were:

Dr. J. Fred Edmonds, President, Dr. John W. Robertson, secretary, and Drs. J. L. Decormis, W. Carey Henderson, W. W. Kerns, Harry Denoon, Ira Hurst, J. C. Doughty, W. T. Green, W. J. Sturgis, Rooker J. White, J. R. Hamilton and Mr. A. A. Shanks. The following dentists were present as visitors: Drs. C. F. Turman, Warner Lewis and Dixie Lilliston.

Dr. William J. Sturgis, Nassawadox, read a very interesting and comprehensive paper on the "Early Treatment of Syphilis." The discussion was led by Dr. Ira Hurst, of Parksley. Mr. A. A. Shanks discussed this from the laboratory standpoint.

Dr. John W. Robertson, Onancock, read a paper on "Fractures of the Forearm," illustrated by numerous X-ray plates. Discussion was led by Dr. Harry Denoon, of Nassawadox.

The program for the meeting held on the second Tuesday in December at the Nassawadox Hospital was as follows:

"Dislocations of the Shoulder Joint" by Dr. Griffin Holland, Eastville, with discussion led by Dr. W. Carey Henderson, of Nassawadox, and a paper on "Pneumonia" by Dr. W. W. Kerns, Bloxom. Discussion on this led by Dr. J. R. Hamilton, of Nassawadox.

The Physicians' Journal Club is doing a fine work in bringing the physicians of the Eastern Shore into closer contact. Much interest has been added to the meetings by having the dentists meet with the Society.

News Notes

We wish to extend our best wishes for a Prosperous and Happy New Year to all our readers.

The Seaboard Medical Association of Virginia and North Carolina

Met in Kinston, N. C., December 4th-6th, with a large attendance and the association had one of the best meetings in its thirty-nine years of existence. The opening session was a public meeting at which Dr. C. C. Carpenter, of Wake Forest, spoke, with the aid of lantern slides, on what the public should know about cancer. At this session His Excellency, John C. B. Ehringhaus, Governor of North Carolina, gave an address on "A Layman's Tribute to the Physician." Some of the features were a study of the use of living sutures by Dr. James C. Masson, of the Mayo Clinic, and also Dr. R. L. Payne, Norfolk. This subject was illustrated by lantern slides and a movie film. One entire forenoon was given over to a symposium on Kidney Disease, this being led by Dr. C. C. Carpenter, of Wake Forest, and closed by Dr. Manfred Call, of Richmond, invited guests. There were also five others on the symposium.

The admission of members this year was more than triple the average. The true "Old Southern Hospitality" was lived to the letter by the people of Kinston.

Officers elected for the coming year are: President, Dr. A. M. Burfoot, Fentress, Va.; vice-presidents, Dr. Thomas L. Lee, Kinston, N. C.; Dr. Otis T. Amory, Newport News, Va., Dr. Thomas M. Watson, Greenville, N. C.; and Dr. John R.

Hamilton, Nassawadox, Va.; treasurer, Dr. Fred C. Rinker, Norfolk, Va.; and secretary, Dr. Clarence Porter Jones (re-elected), Newport News, Va.

It was voted to hold the 1935 meeting, December 3-5, 1935, at the Chamberlin Hotel, Old Point, Va.

Health Service in Virginia to be Expanded.

An expansion of health activities in Virginia is contemplated in view of the announcement form Washington that this State is to receive an allotment from Federal funds for the proposed establishment of fifteen new county health units. This allotment, which is expected to be about $60,000, is made from money provided by the FERA for rural health projects under the U. S. Public Health Service. It is understood that the State and the localities aided are to "match" the Federal aid.

Medical College of Virginia News Notes.

Dr. Iva Miller, Vice-President of the Medical Woman's National Association, gave an illustrated lecture on December 5th to the women students of the college. Dr. Miller has done extensive medical and public health work both in China and the United States.

The Norfolk alumni held their annual dinner on November 26th, at which new officers were elected. Dr. L. E. Jarrett, secretary of the alumni association, Dr. W. T. Sanger, Mr. J. R. McCauley, and Dean Wortley F. Rudd attended the meeting.

Dr. Joseph Mountin, United States Public Health Service, Washington, D. C., was a visitor here on December 13th. Dr. Mountin was in Richmond in the interest of the survey being made by the Richmond Council of Social Agencies of all social, medical, and public health services.

Dr. Rolland J. Main has been granted a leave of absence effective February 1st, to do research work at the University of Chicago on the study of Alveolar Carbon Dioxide in Man.

The new central heating plant for the college, which is to be financed by a loan and grant from the Federal government, is expected to be under way within two months and be completed by the beginning of the next heating session.

The regular scientific monthly meeting of the staff was held December 13th. Dr. Frank L. Apperly described "An Instrument for Rapidly Measuring the Average Diameter of Red Corpuscles in Anemias." Dr. N. G. Patterson lectured on "Medical Work in China" and Dr. Kinloch Nelson discussed female sex hormones.

Founders' Day was celebrated on December 3rd. Dr. S. C. Mitchell, professor of history and political science, University of Richmond, gave an interesting talk on The Past and Future of the Medical College of Virginia.

News from University of Virginia, Department of Medicine.

On November 8th Dr. Bruce Morton spoke before the Cabell County Medical Society, meeting in Huntington, W. Va., on the subject of Hyperparathyroidism.

The Josiah Macy, Jr. Foundation has contributed the sum of $500.000 to the School of Biochemistry for research on cholesterol under the supervision of Dr. Alfred Chanutin.

Dr. Oscar Swineford spoke on the subject of Food Allergy at the semi-annual meeting of the State Dietitians Association in Norfolk on November 9th.

At the meeting of the University Medical Society on November 19th Dr. H. E. Jordon spoke on The Significance of the Lymphoid Nodule; Dr. R. V. Funsten gave an account of his recent visit to the Locke Clinic in Williamsburg, Ontario.

Forty-eight physicians attended the Postgraduate Clinic held at the University Hospital on November 16th.

Dr. John H. Neff and Dr. Edwin P. Lehman attended the meetings of the Southern Surgical Association at Sea Island, Ga., from December 11th to 13th. Dr. Lehman presented a paper on Spinal Extradural Cysts.

On December 5th to 8th a Postgraduate Course in Ophthalmology and Otolaryngology, sponsored by the University of Virginia at the request of the Virginia Society of Otolaryngology and Ophthal-

mology, was given at the Medical School. Lectures were given by Drs. E. Ross Faulkner, John R. Page, E. B. Burchell, John H. Wheeler, Conrad Berens, Bernard Samuels and John H. Dunnington, of New York City; Dr. George M. Coates, of the University of Pennsylvania; and Drs. H. S. Hedges, Fletcher D. Woodward, Edwin Burton, Vincent W. Archer and Oscar Swineford, of the University of Virginia. Thirty-two physicians registered for the course.

At the meeting on December 6th, Dr. John R. Page, Surgeon Director of the Manhattan Eye, Ear and Throat Hospital, New York City, addressed the University Medical Society on Remarks on the Significance and Prevalence of the different Middle Ear and Mastoid Infections.

News from the New York Polyclinic Medical School and Hospital.

At the meeting of the Clinical Society of the New York Polyclinic Medical School and Hospital, New York City, held on December 3, 1934, Dr. Charles L. Scudder, of Boston, Mass., read a paper on "Trends of the Treatment of Fractures."

At the meeting of the Clinical Society of the New York Polyclinic Medical School and Hospital to be held on January 7, 1935, the guest speaker will be Elliott Cutler, M. D., Harvard University, who will deliver a paper on "Treatment of Heart Disease by Total Thyroidectomy."

Dr. Pol. N. Coryllos will give a special afternoon lecture on Surgical Treatment of Pulmonary Tuberculosis on Saturday, January 12, 1935 at 3:30 P. M.

Dr. Russell L. Cecil will give a special afternoon lecture on Foreign Protein Therapy on Wednesday, February 6, 1935 at 2:30 P. M.

Assistant Director of Rural Health and T. B. Work in Virginia.

Dr. William D. Tillson, recently engaged in public health work in Baltimore County, Maryland, has been appointed assistant director of rural health and tuberculosis out-patient service of the Virginia State Health Department, and entered upon his new duties on December 1st. He will serve under Dr. E. L. McQuade, director of the rural health service.

Dr. Tillson is an alumnus of the University of Virginia, Department of Medicine, class of '19, and practiced for a time in Isle of Wight County, Virginia. Before going to Maryland he was chief of the Tuberculosis Division of the Ohio State Health Department. His present appointment was necessitated by additional work placed on the State Health Department on account of the depression and was made possible by outside funds contributed to the Health Department.

Dr. William B. Meares, Jr. ,

Formerly of Richmond, Va., where he practiced for some time, has located in Lexington, N. C. He is opening offices the first of this month and will specialize in proctology.

Dr. Hunter H. McGuire,

Winchester, Va., has been named by Governor Peery as a member of the board of visitors of the Medical College of Virginia to succeed the late Col. John W. Williams.

Association of Seaboard Airline Railway Surgeons.

At the meeting of this Association in Miami, Fla., early in December, Dr. Robert C. Woodward of that city was elected president for the coming year, succeeding Dr. Henry E. Palmer, of Tallahasse, Fla. Dr. Hunter M. Sweaney, Durham, N. C., Dr. Stewart R. Roberts, Atlanta, Ga., and Dr. Curtis E. Crosby, Greenwood, S. C., were elected vice-presidents. Richmond, Va., was selected as the 1935 place of meeting, the dates to be set by the executive committee.

Dr. Joseph D. Collins, Portsmouth, Va., chief surgeon of the Seaboard, was toastmaster at the annual banquet, at which Senator Royal S. Copeland, of New York, was the principal speaker.

Dr. N. P. Fitts

Recently located at Maurertown, Va., where he is engaged in the general practice of medicine. He is a member of the class of '29, Medical College of Virginia and interned at Memorial Hospital, Richmond, Va. He was later on the staff of the Eastern State Hospital, Williamsburg, Va., for three years.

Dr. N. Thos. Ennett,

Formerly of Richmond, Va., but recently connected with the Surry County, North Carolina, Department of Health, with offices at Mt. Airy, N. C.,

has accepted the position as health officer of Pitt County, North Carolina, which is a larger field, carrying a seven piece unit. He entered upon his new work on December 15th.

Dr. John E. Vaughan,

Of the class of '33, University of Virginia, who interned last year at the St. Francis Hospital, Charleston, W. Va., has gone to California, where he is connected with the Kern General Hospital, at Bakersfield.

Dr. Brenton A. Tilghman,

Richmond, Va., is spending some time at Saranac Lake, N. Y., but expects to resume his practice in Richmond in May or June.

Southern Surgical Association.

Dr. R. L. Payne, Norfolk, Va., was elected president of the Southern Surgical Association at its recent meeting at Sea Island, Ga. He succeeds Dr. Frank K. Boland, of Atlanta. Dr. Payne had previously been secretary for nine years. As the Association has a limited membership of 200, there were only six new members elected to replace those who had died or resigned. Dr. C. Bruce Morton, University, Va., was the only Virginia doctor admitted. The next meeting of the Association will be held at Hot Springs, Va., in 1935.

Dr. Elizabeth B. Sherman

Has located in Front Royal, Va., where she will be engaged in general practice. She is a graduate of the class of '26, University of Maryland, School of Medicine, and served three years' internship at the University and Franklin Square Hospitals in Baltimore. Dr. Sherman also took fifteen months' special training in pediatrics at the Bellevue Hospital and Seaview Tuberculosis Hospital in New York and has for the past three years been practicing pediatrics in Baltimore.

Southern Medical Association.

The meeting of this Association in San Antonio the middle of November was a most excellent one in every way and had a total registration of 2,852, of whom 1,945 were physicians. The total registration from Virginia was only thirty-seven, several of whom went on the post-convention trip to Mexico.

Dr. H. Marshall Taylor, Jacksonville, Fla., was elected president for the ensuing year, and Drs. J. Manning Venable, San Antonio, and S. O. Black, Spartanburg, S. C., vice-presidents. St. Louis, Mo., was selected as the 1935 place of meeting.

Dr. J. E. K. Flannagan,

Class of '25, University of Virginia, formerly Medical Director of Mt. Regis Sanatorium, Salem, Va., is now with the Tuberculosis Control Department of the Alabama State Board of Health, located at Montgomery, Ala.

Dr. Maxwell E. Lapham,

Who so efficiently conducted the courses in Prenatal and Postnatal Care in Virginia for a little over two years, under the auspices of the Medical Society of Virginia, is now in Mississippi where he is engaged in a similar work. As in Virginia, the Mississippi State Medical Association has the cooperation of its State Health Board and the Tulane University of Louisiana School of Medicine, with financial assistance from the Commonwealth Fund.

Dr. Carl V. Reynolds,

Asheville, N. C., has been appointed acting state health officer of North Carolina, to succeed Dr. James M. Parrott who died in November. Dr. Reynolds was health officer of Asheville for a number of years and was president of the North Carolina State Board of Health until this appointment.

Dr. Sylvester D. Craig, of Winston-Salem, has succeeded Dr. Reynolds as president of the Board.

Acting Health Officer for Albermarle-Charlottesville.

Dr. Robert A. G. Jones, young practicing physician of Norfolk, Va., has been appointed acting health officer for the Albemarle-Charlottesville Joint Health Department until the arrival of the permanent health officer about April 1st, next. He is relieving Dr. Kenneth Maxcy who has been filling this position since the resignation of Dr. E. L. McQuade on August 1st. Dr. Jones is a graduate of the University of Virginia in the class of '33 and later interned at the Delaware Hospital, Wilmington.

Dr. Charles Lewis Baird,

Captain U. S. Army, M. C., recently stationed at Ft. Benning, Ga., sailed early in December for Hawaii, where he will be stationed for two years. He was accompanied by Mrs. Baird and their young son.

Dr. and Mrs. Zenas B. Noon,

Nogales, Arizona, are receiving the congratulations of their friends upon the arrival of twin sons. Dr. Noon is a member of the class of '30, Medical College of Virginia.

Dr. A. K. Turner,

Of the class of '33, University of Virginia, Department of Medicine, recently located in Martinsville, Va., for the practice of his profession. His internship was served at the Long Island Hospital, Boston, Mass.

Dr. Leo E. Hayes,

Recently of Covington, Va., is now at the New York Postgraduate Medical School and Hospital for the study of dermatology and syphilology, with a view of specializing in these subjects.

Dr. Karl Blackwell,

Richmond, Va., was elected president of the Parents' League of Richmond, at its annual meeting on December 12th. He succeeds Dr. Carrington Williams in this office.

Dr. L. Nelson Bell,

A member of the Medical Society of Virginia, located at Tsing-kiangpu, Ku., China, was among the Virginia doctors on whom a fellowship in the American College of Surgeons was conferred at the recent Clinical Congress in Boston.

Dr. Bell took his pre-medical work at Washington and Lee University and received his M. D. degree from the Medical College of Virginia in 1916. During his senior year he was an undergraduate interne at the Memorial Hospital. He went to China in the fall of 1916 and since that time has been connected with the Tsing-kiangpu General Hospital of the Presbyterian Mission, specializing in general surgery.

In 1922-23 he received a fellowship from the Rockefeller Foundation for postgraduate work and spent a year in this country doing this special work. He did additional work in this country during part of 1927-28 and is due in America on furlough again during the summer of 1935.

Dr. A. I. Dodson,

Richmond, Va., was among those attending the Southeastern Branch Society of the American Urological Association which met December 7th and 8th at Atlanta, Ga.

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Obituary Record

Dr. Benjamin May Baker

Was born in Petersburg, Va., on August 8, 1865, and died in Norfolk, Va., on November 16, 1934. His education was received at the University of Virginia, and at the College of Physicians and Surgeons of New York.

Locating in Norfolk for the purpose of practicing his profession, he early demonstrated that cheerful, unselfish, painstaking devotion to his work that constituted the outstanding characteristic of his career.

Notwithstanding an enviable reputation as a skillful surgeon, Dr. Baker did not abandon the practice of general medicine. In this he was unique. As long as he was physically able to do so he cheerfully responded whenever and wherever he was called. There was about him always an air of alertness which, with his engaging smile and sweet disposition, made it pleasant to be associated with him.

Already, in the community he so efficiently served for a long period of time, he is sorely missed. His most appropriate memorial is that found in the hearts of the many who knew him as their friend.

He was a member of the local and State Medical Societies and of the American Medical Association, and to the end of his career maintained an active interest in the welfare of his profession.

Announcement of Dr. Baker's death is received by the Norfolk County Medical Society with deep sorrow, and it therefore resolves:

1st. That the Society and the whole community has lost a valuable and lovable friend.

2nd. That the Society joins his bereaved family in their sorrow at his passing.

3rd. That this record be included in the minutes of the Society, a copy sent to Dr. Baker's family, and one also to the VIRGINIA MEDICAL MONTHLY.

LOMAX GWATHMEY,
A. BROWNLEY HODGES,
N. G. WILSON.

Dr. James William Henson,

Prominent surgeon of Richmond, Va., died on November 28th, after an illness of several weeks. He had been a member of the Medical Society of Virginia for forty-four years and was a fellow of the American College of Surgeons and various other medical and surgical organizations. He is survived by his wife who was a daughter of the late Dr. W. W. Parker of this city, a son, Dr. Clifton Henson, of New York City, and one daughter.

The following appreciation and resolutions were adopted by the Richmond Academy of Medicine:

Dr. James W. Henson was born on October 3, 1863, at Scottsville, Va., a representative of distinguished families established in Virginia more than two centuries ago. He was a son of the late William Henry Henson, who served with distinction in the Confederate Calvary and Marie Antoinette Hoge Henson. Dr. Henson spent his early life in Louisa County, Virginia, and began his studies at the Green Springs Academy of Louisa and was later a pupil in the Hoover Select Military Academy located at Staunton, after which he enrolled at Richmond College. Upon completion of his work there he taught school for a short time.

In the fall of 1886 Dr. Henson entered the Medical College of Virginia, and was graduated from that institution in the spring of 1889 with the degree of M. D. Immediately upon graduation, he served as an interne at the City Home in Richmond, and at the expiration of that period began the active practice of his profession in Richmond.

Dr. Henson was a profound student and a forceful teacher, and for many years taught at both the University College of Medicine and the Medical College of Virginia. From 1894-95 he was demonstrator of anatomy at the University College of Medicine; in 1895 he was elected professor of anatomy which chair he held until 1899; from 1899 to 1903 he continued as professor of anatomy and was also demonstrator of orthopedic surgery. From 1903-1904 he served both as professor of anatomy and genito-urinary surgery. From 1904 to 1910 he was professor of surgical anatomy and lecturer on principles of surgery, and from 1910 to 1913 was professor of principles of surgery. Upon the consolidation of the University College of Medicine with the Medical College of Virginia in 1913, he was appointed associate professor of surgery and served in this capacity until 1922.

Dr. Henson was at various times devoted to many charitable organizations; he was probably best known for his work in connection with the Women's Relief Association, which was established in 1922 for the purpose of treating the indigent women of the City of Richmond. This institution owes its existence largely to his efforts, and Dr. Henson was chairman of its staff from its inception until the time of his death. Dr. Henson also rendered valuable service in behalf of the Retreat for the Sick Hospital and under his guidance its staff was reorganized several years ago; the hospital later gained recognition from the American College of Surgeons, and has maintained this high standard until the present time. He was chairman of the executive committee at the Retreat until a few months before his death when he resigned because of ill health.

Dr. Henson possessed a keen sense of clinical judgment which he fruitfully and diligently applied to his practice. Through his sympathetic and understanding efforts in behalf of those to whom he ministered he was invariably able to gain their confidence and friendship both of which he held in many instances throughout his entire professional life.

WHEREAS, Dr. Henson faithfully served many of the citizens of this community through a long period of years with untiring energy and boundless charity. Therefore, be it

RESOLVED, That in his death, which occurred at the Retreat for the Sick Hospital on November 28, 1934, the Richmond Academy of Medicine has lost a loyal and distinguished member and the community one of its most valuable citizens.

BE IT FURTHER RESOLVED, That these resolutions be spread on the minutes of the Richmond Academy of Medicine and a copy be sent to the bereaved family and the VIRGINIA MEDICAL MONTHLY.

Respectfully submitted,
C. I. SEASE,
STUART N. MICHAUX,
R. E. MITCHELL,
THOS. D. JONES, *Chairman.*

Dr. Henry Jeter Edmonds,

Prominent and much beloved physician of Kilmarnock, Va., died December 13th, following a stroke of paralysis with which he was stricken while returning from attending a patient. He was a native of Lancaster County, Virginia, and sixty-eight years of age. Dr. Edmonds graduated in medicine

from the University of Maryland in 1887 and shortly thereafter located at Kilmarnock where he had since practiced. He had been a member of the Medical Society of Virginia for forty-six years and was a prominent Mason. His wife and a son survive him.

Dr. Ernest Downer Davis, Sr.,

Prominent physician of Stanardsville, Va., died December 3rd, following a brief illness. He was sixty-seven years of age and a graduate of the Medical College of Virginia in the class of '89. Dr. Davis had been practicing in Stanardsville since his graduation and for a number of years was chairman of the Democratic Committee of Greene County. He held membership in several organizations and had been a member of the Medical Society of Virginia for thirty-four years. Dr. Davis is survived by his wife and seven children, one of them being Dr. E. D. Davis, Jr., of Crozet.

Writing of Dr. Davis, a friend says:

"The night was never too cold or dark to answer the call of the sick, whether it came from a lowly mountain hut on 'High Top' or from the most pretentious home in Greene County's beautiful valleys. No man who has ever lived within the county's borders will be more missed."

Dr. Dexter P. Cannaday,

Roanoke, Va., died November 11th, death being due to pneumonia following perforated duodenal ulcer. He was a native of Floyd County, Virginia, and nearly fifty-seven years of age. Upon completion of his academic education, he studied medicine, graduating from the Medical College of Virginia in 1905. He had been a member of the Medical Society of Virginia for about twenty-five years. Four children survive him.

The Roanoke Academy of Medicine adopted the following resolutions on the death of Dr. Cannaday:

WHEREAS, Armistice Day, 1934, the Master saw fit to remove from our midst one of our fellow members, in the death of Dr. Dexter P. Cannaday, and,

WHEREAS, Dr. Cannaday has given a long and faithful service to the people of this community; in his profession was respected by all, and especially loved by his patients.

BE IT RESOLVED, That the Roanoke Academy of Medicine has lost one of its loyal members, and this community a capable physician and friend, in the death of Dr. Cannaday, and

BE IT FURTHER RESOLVED, That these resolutions be spread on the minutes of the Academy, and copies be sent to his children and to the VIRGINIA MEDICAL MONTHLY.

R. L. MASON,
E. C. WATSON,
E. B. STONE,
Committee.

Dr. John Hendron Bell,

Former Superintendent of the Virginia Epileptic Colony, died in Staunton, Va., December 9th, from heart disease. He was fifty-one years of age and graduated in medicine from the former University of the South, Sewanee, Tenn., in 1909. Dr. Bell had resided in Staunton since his resignation from the Colony a year ago on account of ill health, having served that institution for about eighteen years. Dr. Bell had been a member of the Medical Society of Virginia for seventeen years. His wife and a daughter survive him.

Dr. Robert Tannahill McNair,

Emporia, Va., died December 9th, following a brief illness from pneumonia. He was a native of North Carolina and fifty-six years of age. Dr. McNair graduated from the Medical College of Virginia in 1900. He was formerly a member of the Medical Society of Virginia. His wife and a son survive him.

Dr. Wendell Christopher Phillips,

A past president of the American Medical Association, died at his home in New York City on November 16th. He was seventy-seven years of age and graduated in medicine from the University of the City of New York in 1882. He specialized in diseases of the ear, nose and throat. Dr. Phillips was long active on various boards and committees of the American Medical Association, but will be especially remembered by Virginia doctors as one of the invited guests at the 1925 meeting of our State Society in Richmond.

Dr. James Marion Parrott,

State Health Officer of North Carolina, died at his home in Raleigh, on November 7th, death being due to heart disease. He graduated in medicine from Tulane University of Louisiana in 1895 and was sixty years of age. He was a former president of the Medical Society of the State of North Carolina and had been the recipient of many honors by the medical profession of his state.



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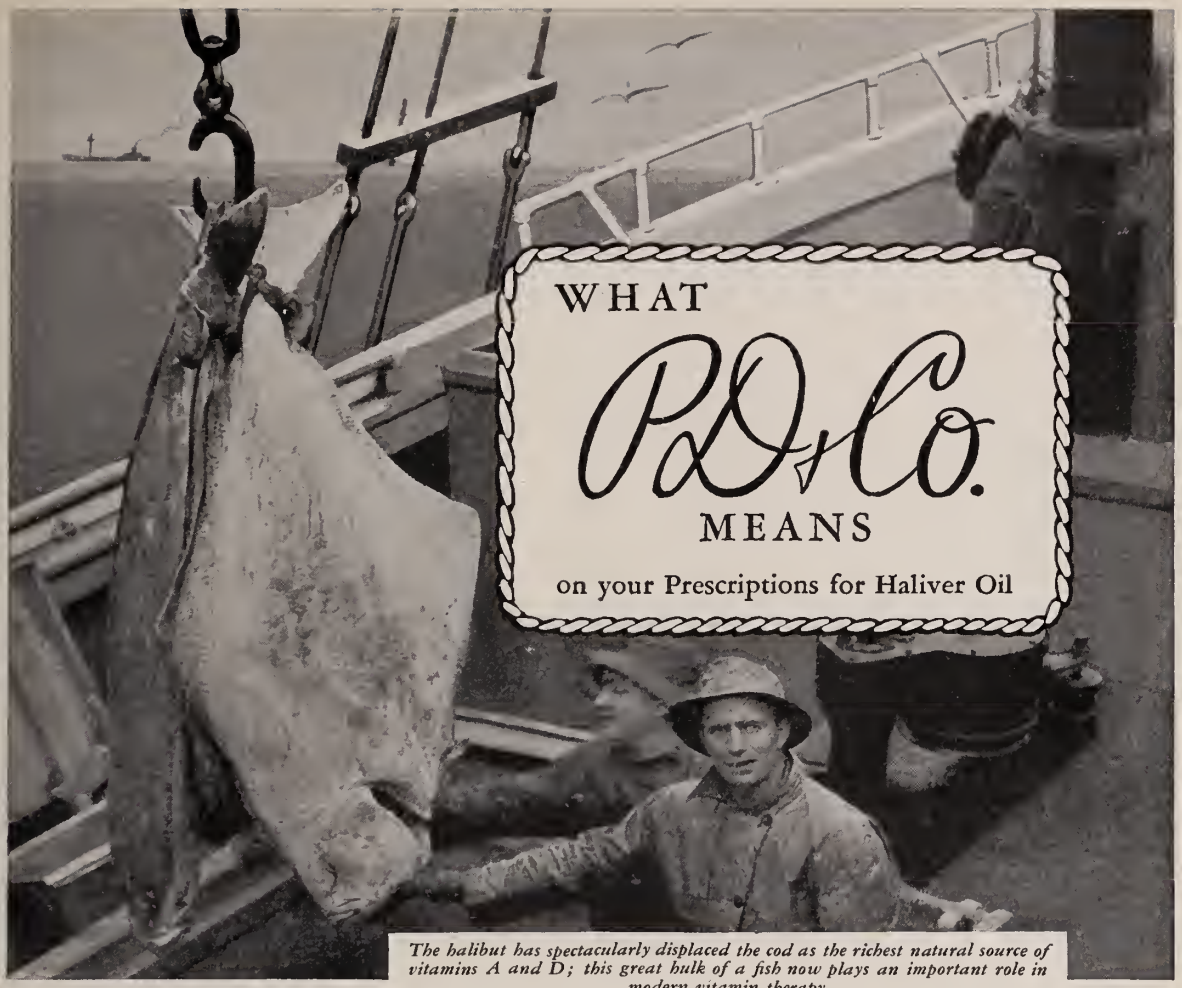
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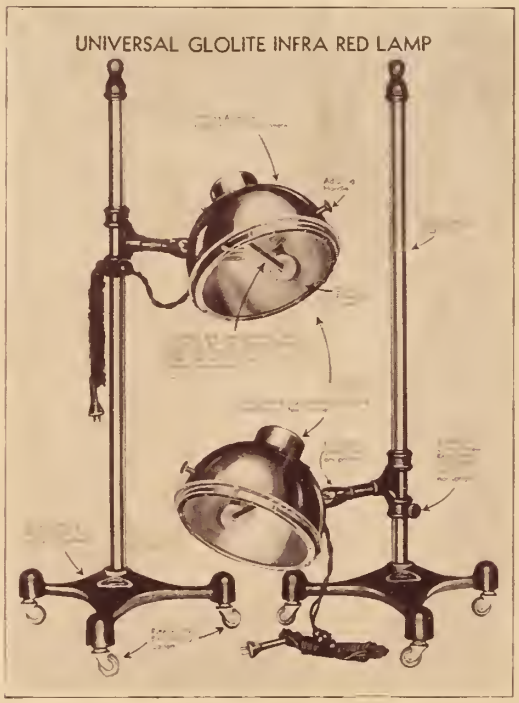
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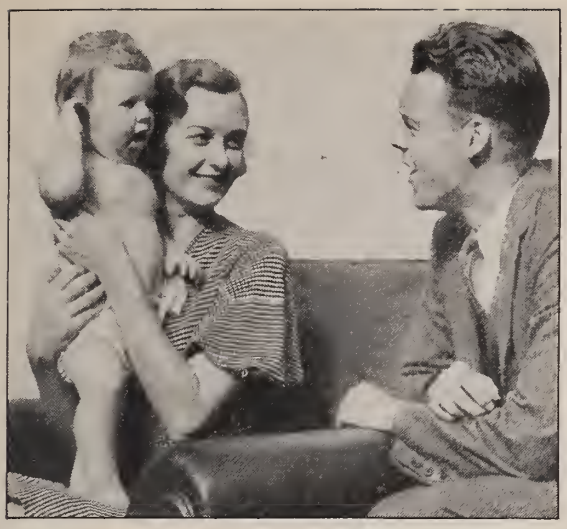
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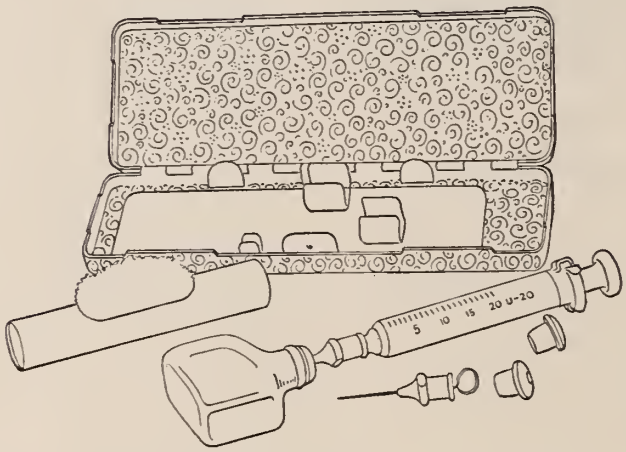
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SURGICAL PROGRESS

The following question was recently submitted by the Editor to a number of American surgeons: "What do you consider the three greatest achievements of surgery in the past ten years?" The VIRGINIA MEDICAL MONTHLY believes their answers will prove as interesting to its readers as did the answers to a similar question published several months ago:

1. The surgical invasion of the thorax with successful lobectomies for carcinoma;
2. The clinical recognition and successful removal of functionally active adenomas of ductless glands other than thyroid;
3. The furtherance of knowledge concerning the sympathetic nervous system through surgical procedures.

—Harvey Cushing, *Yale University, School of Medicine.*

I dodge the superlative but three great achievements of the last ten years are:

1. Development of transurethral prostatic resection;
2. New methods of anesthesia;
3. Application of surgery to the sympathetic nervous system.

—C. H. Mayo, Rochester, Minnesota.

1. Lobectomy and pneumonectomy in thoracic surgery;
2. The surgery of abnormalities of the endocrine system, especially the adenomas of the parathyroids and pancreas;
3. Diagnostic procedures with intravenous dyes in diseases of the biliary and urological tracts.

—Allen O. Whipple, *Columbia University,* New York City.

1. The development of thoracic surgery involving the treatment of lung, bronchus, etc.;
2. The surgical cure of conditions due to endocrine tumors, of adrenals, parathyroid, etc.;
3. The study and treatment of peripheral, vascular disease.

—Harvey B. Stone, Baltimore, Maryland.

1. The use of barbiturates as a preliminary for basic anesthesia;
2. The newer operations for the relief of hypertension;
3. The establishment of hyper-parathyroidism.

—C. D. Brooks, Detroit, Michigan.

1. The various operative procedures developed for the treatment of pulmonary tuberculosis;
2. The perfection of technique of lobectomy (pulmonary);
3. The successful transplantation of portions of ductless glands.

—Carl Eggers, New York City.

1. Surgery of the sympathetic nervous system;
2. Surgery for relief of certain diseases of the parathyroid glands;
3. The standardization of operative technique and the lowering of surgical mortality in cancer of the large bowel and rectum.

—Fred W. Rankin, Lexington, Kentucky.

1. Parathyroid surgery;
2. Removal of entire lung or portions of lung;
3. Hyperinsulinism—removal of pancreatic tumors.

—Adrian V. S. Lambert, *Columbia University,* New York City.

If I had to distinguish fields for progress under your caption, I should say that the three greatest strides forward were made in the fields of

1. Thoracic surgery;
2. Neurological surgery;
3. Bronchoscopy.

—Elliott C. Cutler, *Peter Bent Brigham Hospital,* Boston.

Nothing done in the past ten years impresses me as a "greatest" achievement.

1. One might think of the successful removal of the entire lung for carcinoma;
2. There have been tremendous improvements in technic;
3. Anesthesia has shifted somewhat in these ten years.

—George P. Muller, *University of Pennsylvania,* Philadelphia, Pa.

SYMPOSIUM ON HEART DISEASE*

FUNDAMENTALS IN THE PHYSIOLOGY AND PATHOLOGY OF THE CIRCULATION.

R. A. MORISON, M. D.,
Abingdon, Va.

The fundamental physiology of the circulation begins with the function of the individual muscle fiber. The heart muscle has an inherent rhythm, which is as mysterious as life itself. The explanation as to this rhythmic contraction has been explained by the myogenic theory, or the neurogenic theory. The proof of either of these theories has been impossible.

The actual mechanism of contracting heart muscle has been the subject of a great amount of research. Briefly, Ringer[1] noted that if an excised heart is infused with aqueous solution of calcium, potassium and sodium salts in proper concentration, rhythmic function of the heart will continue for a long time, and that these three salts are necessary for continuance of muscular contraction. W. H. Howell[2] noted that antagonism between sodium and calcium, present in balanced ratio, acts as the exciting agent for spontaneous beats. Loeb[3] observed that the presence of certain ions influences the imbibition of water by soaps, and that variation of the kind and concentration of these ions can cause water to proceed into or out of the soap. Loeb's theory is that the various ions enter the muscular cell, and unite with cellular constituents. The sodium ion enters the cell, displaces a portion of the calcium from its intracellular compounds, and by this displacement excites the cell to contract.

The theory of G. R. Mines[4] assumes that the contractile mechanism responds to a transitory increase of hydrogen ions at interfaces within the cardiac muscle structure. Such change (H-ion conc.) will depend upon constant permeability of cell membranes. He claims calcium as a combining ion; sodium and potassium as nomadic ions; hydrogen and hydroxyl ions as polarizing, which affect the surface potential of the cell. Zwaardemaker[5] believes there is a hormone manufactured by skeletal muscle that is changed by the radioactivity of potassium to automatin which is capable of giving automaticity to heart muscle.

These theories, and there are numerous other theories, are based upon extensive fundamental studies of the contracting heart muscle fiber, and mean that there is a delicate chemical and physico-chemical reaction which causes muscle fiber contraction, and which, during contraction, furnishes material for rest and relaxation of the fiber to a state where contraction will occur again. In a general way, these theories are of prime importance to us as clinicians in attempting to understand the behavior of the circulation.

The pathological consideration here is that whatever process damages heart muscle fiber, whether inflammatory infections, degenerative, toxic, due to physical agents, chemical agents or injury, the function of the heart will suffer.

There are names for various pathological processes which are found in the heart muscle; but these names are attempts to express the degree of damage to the heart muscle generally, or at some particular place in the heart. Roughly, there are three divisions under which the physiological and pathological functions of the circulation may be discussed, and each of these divisions is of prime importance.

First, there is the mechanical aspects of the circulation, by which I mean the pumping action of the heart, pressures within heart chambers and blood vessels, etc., hydrostatic factors, amount of blood, work rate, and viscosity of blood.

Second, the chemical aspects of the circulation, by which I mean: the composition of the blood, condition of blood cells, electrolytes within the blood, endocrine glands, bacterial infections, respiratory exchanges, excretion of products of metabolism.

Third, neurological aspects of the circulation. By this I mean those nerve fibers which affect heart

*The four papers by Drs. Morison, Stuart, Jackson and Owens were read as part of a Symposium on Heart Disease before the Southwestern Virginia Medical Society, at Marion, Va., March 23, 1934.

rate; pressor and depressor accelerator—vagus, receptive stimuli, internal stimuli, vasomotor nerves.

The pumping action of the heart for each normal heart beat is initiated at the sino-auricular node, or pacemaker. This is a small area of tissue lying at the fork formed by the upper appendage of the right auricle and the superior vena cava. The impulse for the heart beat starts here and travels by an undiscovered path to the auriculo-ventricular node (Keith and Flack), and from thence is transmitted through the bundle of His to the right and left ventricles.

Pathologically, if the sino-auricular node is destroyed, the rhythm of the heart is then initiated by the auriculo-ventricular node, and the heart rhythm may remain regular. If the bundle of His be destroyed before division to right and left branches, then heart block occurs, the auricles being wholly dissociated from the ventricular beats. If the right or left bundle be destroyed, then there is bundle branch block to the right or left ventricle.

Each impulse initiated at the pacemaker begins an electrical wave which passes through the heart through the channels mentioned. These electrical waves precede the actual muscular contraction in the different chambers of the heart by measured times. The function of the sino-auricular node is to initiate impulses, which are spread to the auriculo-ventricular node and throughout the ventricles by the bundle of His or the conduction bundle. The auricular contraction starts about 0.25 sec. after the impulse originates.

Starling has stated that the pumping action of the heart and state of peripheral circulation are the chief factors in determining the systemic flow; and, further, that the healthy heart maintains an output such that the venous pressure in the vena cava remains at zero for inflows up to one liter per minute. Barcroft[6] states that the heart reacts to change in the peripheral circulation by adjusting its output to maintain venous pressure approximately constant.

So the pressure changes in the pumping system start at the vena cava at zero, though there are variations of this, depending upon respiration and upon whether the right auricle is in diastole or systole. The pressure within the auricles during systole is low a few mm. of mercury because its contraction requires very little force to deliver blood into open auriculo-ventricular valves and the relaxed ventricle. The ventricular pressure rises rapidly, opens the semilunar valves, discharges blood into the aorta, and the pressure falls, the semilunar valves close and the muscle is relaxed.

Pathologically, the things which may interfere with the pumping action of the heart are: Disturbance to any muscle or part of heart muscle, strain, tumors, age, damage to muscle fibers, fibrosis degeneration, infections, endocardial damage, epicardial damage, pericardial damage, extracardiac pressure, interference with venous inflow, obstruction to venous inflow, valvular damage preventing apposition of valves, narrowing of their lumen, or dilatation of their lumen.

The circulation to the heart muscle, once thought very simple, has been shown to be a most complex affair. The heart's function is dependent upon its circulation. It has been shown by Wearn and Mettier[7] that there is communication between the coronary arteries and the chambers of the heart.

The coronary arteries arise from the aorta above the semilunar valves, one branch going down the left ventricle, one down the right ventricle. There is extensive anastomosis,[8] extracardiac, of these coronary arteries, extending to the mediastinum, lungs, parietal pericardium, both surfaces of the diaphragm, and through the vasa vasorum to the abdominal aorta. Other than these extracardiac branches, the coronary arteries give off branches which have three different routes through the heart walls: 1st, they distribute blood to arteries and capillaries, to veins or to Thebesian veins, thence to heart chambers; 2nd, from coronary arteries to the vessels described by Wearn and Mettier,[9] called arterio-luminal vessels, thence to heart chambers; 3rd, from coronary arteries to arterio-sinusoidal vessels (Wearn and Mettier), then to arterioles or to myocardial sinusoids, thence to heart chambers. The Thebesian veins communicate with heart chambers or capillary beds, thence to veins—coronary sinus, or to arterio-luminal vessels, or myocardial sinusoids.

This extensive circulation means that each muscle fiber of the heart has a relatively tremendous supply of blood; and that a provision is made for a supply of blood to muscular tissue under unusual conditions.

PATHOLOGICAL CONSIDERATIONS

The coronary arteries, or branches, or small radicals, may become occluded by reason of diseased arteries, or some condition of the blood in which clotting occurs and plugs the lumen of the artery. Following the occlusion, there is infarction and necrosis of the muscle fibers to an extent depending upon the size and situation of the plugged artery. This necrosis heals and forms scar tissue under proper conditions in about six weeks. The infarction may be so extensive that the entire heart wall may be necrosed and rupture of it occur through the infarcted area. Endocardial disease occurs and there is found upon the valves vegetations which interfere with their function. These vegetations may be bacterial, or not due to bacteria. Ulcers may form upon the endocardium, leaving scars when healed, and interfering with various vascular channels, thus disturbing nutrition of muscle fibers and modifying muscular contraction. In debilitating disease, the heart muscle may suffer certain degenerations. In failing hearts which are dilated, sometimes the blood is so sluggish in the auricular appendages that a clot forms which may be dislodged and fill the pulmonary artery, causing sudden death; or, if it be in the left auricle, a part may be dislodged and carried to the brain or other parts of the body.

One very important thing upon which proper circulation depends is the reservoir of blood from which the cardiac output is delivered. This reservoir is the blood in the superior vena cava, innominate, inferior vena cava, iliac, hepatic and renal veins.[10] This reservoir is shut off from the rest of the venous system by six pairs of valves, at the femoral, subclavian and jugular veins, and will hold 400 c.c. of blood or more, since the vessel walls are easily stretched. The cistern is in free communication with another large cistern, or reservoir, capable of holding 1,000 c.c. of blood when full, which is the portal system of veins and the liver. Alterations in pressure in the abdomen or thorax vary the venous pressure and affect the heart's output.

The diaphragm, by its rhythmic contraction, its tonus, its position,[11] has a particularly important part in the maintenance of normal function of the heart and circulation. For every sudden demand upon the circulation, there is a reservoir of blood to meet the emergencies, and a diaphragm to increase intra-abdominal pressure and force blood from the reservoirs to the right side of the heart.

It must be stated here that increase in respiration is reflex action and is not initiated by muscular work.[12]

In congestive heart failures the venous reservoirs are overfilled, the venous pressure at the right side of the heart is greatly increased, the heart muscle is unable to move a sufficient quantity of blood, the diaphragm loses tonus, the position of the heart is elevated and its transverse diameter increased, and the vital capacity of the lungs lessened.

Hydrostatic factors are the quantity of blood, etc. Normally, this amount is determined to be 8.8 per cent of body weight. Roughly speaking, in a man weighing 150 lbs., 1.5 gallons is blood. When water is drunk in 1,000 c.c. quantities, there is a dilution of the blood by 3½ to 4 per cent.[13] The heart and blood vessels must accommodate this increase in total blood volume and do increased work in excreting it. When hypertonic saline solutions are taken, the same thing occurs. So one infers when large quantities of food are taken, the blood volume is diluted, the blood vessels and heart must accommodate the increase, and subsequently do increased work in order to excrete the waste products, carry the nutrition from digested foods to various parts of the body, and return the blood volume to its normal. There is then a normal variation to pressures, vessels, heart size, and blood volume.

Increase of fluids in heart disease is drowning the patient without the proverbial straw for him to grasp. The failing circulation cannot excrete fluids properly, because tissue edema and increase in blood volume have depressed the normal cellular function of excreting organs. Withholding fluid from the congestive heart failure is sometimes sufficient to restore it to a competent one.

The rate at which physical work or exertion can be done is the scale by which cardiac and circulatory reserve is measured. The viscosity and concentration of the blood is a factor which permits the trained athlete to endure violent and long-continued muscular exertion. Heart reserve is a variable factor, depending upon the physical training of the individual.

CHEMICAL ASPECTS OF THE CIRCULATION

The circulation is built about the blood itself. This fluid is by weight 55 per cent plasma and 45

per cent corpuscles. The corpuscles contain hemoglobin which combines with oxygen in the lungs, one atom of iron to two atoms of oxygen, under tension of 100 mm. of Hg. This oxygen is given up within the tissues where needed at a much lessened tension—19 mm. Hg. The dissociation pressure varies from 100 to 19 mm. Hg. along the blood route. The things which alter the combining power of oxygen with hemoglobin so as to change in the dissociation curve of oxygen are: Presence of inorganic salts, hydrogen ion concentration (CO_2 tension) of the solution, temperature.

In acidosis there is an increase in H ion concentration of blood, breathing is increased, cyanosis is common because oxygen diffusion is interfered with, heart action is increased. In alkaloses there is a decrease in H ion concentration, breathing is decreased, and oxygen tension is raised. The physiological balance of these things permits the normal delivery of oxygen to tissues of the body.

There are certain salts within the blood clinically so fashioned that the blood resists change in reaction to acidosis or alkalosis. These are called buffer salts.

In chronic heart disease these factors of respiratory exchange of CO_2 and oxygen are important because, if the CO_2 in the blood is low, breathing is consequently increased, and alveolar ventilation is increased because of excitement of the respiratory center by inadequate oxygenation of the blood (anoxemia[15]).

The endocrine glands are interesting in association with the function of the circulation because of the effect that under- or over-activity of certain of these glands have upon the circulation. The most definite action upon the heart and circulation is the toxic effect of the over-active thyroid gland. This causes an irritability of the cardiac muscle and a too rapid heart rate, sometimes eventuating into an hypertrophied heart, cardiac irregularity, fibrillation, and heart failure with dilatation.

The adrenal glands are presumed to have an effect in maintaining the tone of vessels and muscle fibers of the heart; but proof that this occurs has not been forthcoming. We know that epinephrine when injected causes a prompt pressor effect. But the effect of the hormone within the body has not been proven.

Neurologically, the circulation is exceedingly complex. There is a neurological control of the heart—its rate, its rhythm, its volume. There is a neurological control of the blood vessels—their dilatation, contraction, and the pressure within them. This system is delicately balanced and perfectly automatic. There are psychic factors which enter into the reflex control of various parts of the circulation. The most specific action upon the heart beat is by way of the accelerator nerve which increases the rapidity or strength of the heart beat; important also are the inhibitory nerve, which slows the heart rate, and the depressor nerve, which lowers blood pressure through the vaso-constrictor nerves and vaso-dilators that go to the vessels.

These types or classes of nerve fibers are related to the various other nerve fibers whose relation to the circulation is secondary, namely, those receptive fibers conducting sensations of cold, heat, pain, pressure, etc.

Hypertrophy of the heart occurs from an imbalance of the load between individual chambers of the heart, such as from valvular failure or whatever increases the resistance against which auricle or ventricle must work. Probably the normal heart does not hypertrophy,[16] but it does grow concentrically with muscular growth of the rest of the body. When hypertrophy occurs, it is brought about by enlargement of the individual muscular fiber and not by a numerical increase.

Cardiac dilatation is caused by strain or stretching muscle fibers beyond the point of physiological recovery. It is due usually to strain superimposed upon damaged muscle from infection or the products of infection. Sometimes it is the result of diseased muscle which is subject to improper amounts of food and fluid, or degeneration.

Myocarditis is wholly a pathological diagnosis although this term has a wide usage, clinically. It means inflammatory damage to the muscles of the heart sufficient to interfere with function, though sometimes the term is broadly used to mean any departure from normal muscular reaction of the heart. It may be produced by infections, toxins, degenerations and nutritive disturbances.

Endocarditis usually begins at the valves of the heart and disturbs the proper apposition of the valve in question. There may be found vegetations or thickened deposits, bacterial or non-bacterial; ulcers may form upon the valves, and fibrin may

be deposited with scarring of the valve. The leaves of the valve may become adherent, in part narrowing the lumen of the valve. The lining of the heart may be attacked and the vascular orifices partially occluded. Endocarditis usually results in hypertrophy or dilatation of a chamber of the heart, or both, eventually causing some type of heart failure.

The degenerations are those due primarily to conditions arising outside of the heart itself—usually infectious diseases and toxins therefrom. Diphtheria or scarlet fever may cause necrosis of heart muscle, or hyaline degeneration of the fibers. Brown atrophy may occur as a result of age. Fatty degeneration or accumulations of fat droplets in the sarcolemic discs occurs in the course of infectious disease.

As a result of age there is an increase in syncytium, and a stiffening of the heart, which impairs its function. Fragmentation of the fibers occurs, and probably represents a terminal agonizing stress of heart muscle.

The most common congenital malformation[17] is persistent ductus arteriosus. This duct unites the arch of the aorta beyond the origin of the three main vessels to the left branch of the pulmonary artery. In the fetus it carries blood from the pulmonary artery to the aorta. The duct closes at birth and later atrophies. Sometimes this duct remains open and blood flows through it continuously from aorta to pulmonary artery, giving rise to a harsh, loud systolic murmur, accompanied by a thrill. The defect causes no appreciable enlargement to the heart, but occasions dilatation of the pulmonary artery.

A bicuspid aortic valve is found frequently; it is not diagnosable.

Coarctation of the aorta is a defect due to shrinkage of the ductus arteriosus, constricting the aorta as by a hand at the point where the ductus arises. Arteries proximal to the constriction may become dilated; higher blood pressure is the rule in the brachial vessels. In this congenital defect ventricular enlargement is common. The average life of these individuals is about 30 years.

Open foramen ovale occurs in 20 to 30 per cent of all hearts. Patency or defective cardiac septum is much more rare. This defect does not give rise to symptoms, so far as known. Defective interventricular septum occurs and permits mixing arterial and venous blood; usually this defect is associated with others, as malposition or transposition of the great arteries. The vessels are in a general way subject to the same type of pathological process. Arteriosclerosis is the end process of arterial disease. All the arteries in the body are not uniformly affected. There may be only the arteries of the kidney affected, or only those of the brain. The sclerosis is usually confined to one location, and, as age advances, the site of the body that suffers is that in which the arteriosclerosis has developed. The cause of arteriosclerosis is unknown.

Harbitz described acute arteritis as a distinct disease entity. He discovered in localized points of the carotid artery acute inflammatory processes, caused by sterptococci. This he believes the origin of most arterial thickening.

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ARRHYTHMIAS.*

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The term arrhythmia is used to denote changes in the frequency and in the manner of heart beats, and should not be applied in its strictest sense, for the cadence may be regular and coordinated, yet be decidedly abnormal. To try to cover the subject of arrhythmia in detail would be a task beyond the scope of this paper, so an attempt will be made to present what is frankly a brief review of the irregularities of the heart from the viewpoint of the general practitioner.

Cardiac irregularities may be roughly divided into several classes, both as to cause and effect. They may be generalized as exhibitions of increased irritability, as in extra-systoles, or as perversion of function, as in fibrillation, or as inhibition or cessation in the diminishing ability to transmit impulses and the final permanently complete heart block. Irregularities produced through disease of the *conducting* system show results through irregularity in the *contracting system.* A perfected state of function is regular equilibrium between the two systems, which gives a resulting rhythmic contraction of the main mass of the myocardium. Excessive irritability may produce exhaustion in the contracting system, as seen in paroxysmal tachycardia where the main mass of cardiac muscle may be made to contract so fast that it cannot perform its function, and, without rest, may dilate or cease contraction from sheer exhaustion.

Irregularities may exist in single conditions, but it is possible to have two or more present together. The practitioner is often called upon to exercise a nicety of judgment to determine whether or not an acute arrhythmia is due to some acute or chronic intoxication, or to a serious myocardial disturbance. Careful inquiry into the past and present cardiac history is often enlightening. There are many times that a decision cannot be reached, and here is where the information gained from an electrocardiograph is of valuable assistance. As this phase of gaining knowledge is beyond the usual facilities of the physician out in the field, these cases should be referred for this examination.

The usual classification of arrhythmias is as follows:

Sinus Arrhythmia: This is ofttimes referred to as respiratory or as juvenile arrhythmia, because of the marked respiratory influence, and is more often found in children. It depends on changes in control of the sino-auricular node in which effect of vagus influence is important. It may be found after use of digitalis and after pneumonia, and, when it occurs with slow pulse rate and low blood pressure, may be responsible for syncope. It is hardly to be considered serious in the adult, and is not considered pathological in the juvenile. No treatment is necessary and it should not be regarded as an indication for lessened activity. Attention is called to it mainly to stress that it should not cause alarm.

Extra-Systole: This is the most frequent of the arrhythmias, and the one that worries the patient most, as the sensations resulting may be very annoying. It is a premature contraction, which is understood better when one remembers that a stimulus strong enough to set up a contraction is answered by the heart with a maximal contraction. Another property of the heart muscle is that it possesses a "refractory phase," in which it answers only to very strong stimuli or is not excitable. An extra-ventricular impulse, causing contraction, will anticipate the next regular impulse which arrives in the refractory phase, and hence does not contract, causing the wasting of an auricular impulse. Until the next regular impulse arrives in the ventricle there will be the usual interval of rest, and hence diastole will be longer than normal, the period of disturbed rhythm equalling two cycles of the usual, with occasional exceptions. Of this irregularity there are several types which consist of the sinusal, auricular, auriculo-ventricular, and ventricular extra-systoles, but they will not be considered in detail. Extra-systoles occur at any and all ages, but are more common after fifty. They may be found under a variety of conditions, and may be lifelong without any apparent disease or impairment of the heart ac-

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tion. They are found in debilitated and neurasthenic patients with irritable weakness of the heart with palpatation. They may be found in toxic conditions, and after use of tobacco, caffein, nicotine, atropine, certain foods, and may be provoked by digitalis. They are often discovered in flatulence, and are influenced by changes in blood pressure and changes in posture. They are often found after emotional stress. If found in organic heart disease, it is more often of myocardial origin, and will be found after rheumatic endocarditis. The significance of their presence is not always easy to determine, but it has been termed *adult* arrhythmia in contrast to sinus arrhythmia, because of the age incidence. The condition may be temporary, but should never be regarded lightly, especially if the patient is over fifty years old, as it is sometime the forerunner by two or three years of an auricular fibrillation. Valuable information is given in the cases worked out by the electrocardiograph. The sensation provoked by an extra-systole causes a twofold reception on the part of the patient, the first element being the extreme consciousness of the heart beat, and, in turn, the element of fear that results. The descriptions given of these sensations vary greatly with different patients, but they usually describe a feeling of "flopping" or "twisting" when the heart beats, and in the momentary pause is born the fear that cardiac motion has stopped. These may vary from being scarcely perceptible to a choking sensation that provokes a slight cough. At times these spasms may simulate angina pectoris in symptoms enough to cause confusion in the diagnosis. If one can alleviate these symptoms, one is always assured of a grateful patient. Treatment in many instances depends simply on removal of a known cause. If it occurs after the administration of digitalis, discontinuance will give relief. If the cause is flatulence or indigestion, it is cured when these underlying conditions are relieved. Those provoked by emotional stress are relieved by sedatives, particularly phenobarbital in small doses, and are often cured by exercise provided that the myocardium is healthy. Digitalis for the condition itself is never indicated. In other cases the treatment is entirely symptomatic, as there is no specific therapy. Relief from stress, grief, excessive fatigue, and sometimes avoiding the use of tobacco will be needed in individual cases. An acute attack is sometimes helped by the administration of atropine, and the prolonged cases will occasionally be given prompt relief by quinidin sulphate in doses of two to five grains three times a day for a short period. This drug should never be used unless the patient is under careful observation, and should be discontinued if there presents any evidence of dilatation.

Paroxysmal Tachycardia is characterized by attacks that begin and end very abruptly, during which the pulse rate may be from 130 to as high as 200 to 300. The paroxysm is usually ushered in by a sensation of a thumping of the heart that invariably attracts the attention of the patient, and the rapid heart beating then begins. During the attack, while the rate is extremely rapid, the heart beats are energetic, often violent, and the beats occur with watch-like regularity. In severe attacks that are prolonged the heart sounds become muffled, and murmurs will disappear during the attack. This will often obscure a diagnosis of organic heart disease from signs found during an attack. If the attack is excessively severe and prolonged, the pulse diminishes in volume, and may finally become imperceptible, the terminal stage being cardiac dilatation from a prolonged paroyxsm, ending in exhaustion. Blood pressure may be normal or somewhat lowered in the usual attack, and a decided fall in pressure is indicative of impending heart failure. The appearance of the patient may be deceptive, but, as a rule, there is a pallor over the face, which may extend to the mucous membranes and gradually over the entire body. There is also an expression of weariness and anxiety which is very noticeable, in spite of the fact that some patients will attempt to continue with their occupations. There may be a sensation of vertigo, faintness, or even syncope, and sometimes profuse sweating, diarrhea, polyuria, and other vasomotor or sympathetic disturbances may occur. Thoracic pain and gastric distress may also be had. The attacks may last only a few seconds or may extend over a period of hours or even days. There has been noted that in some cases the attacks are spaced with regularity, the interval between being a definite period of days, weeks or months, having a tendency to closer intervals when the condition has been of long standing. There is often no apparent cause, but it may result from exertion, emotional stress or digestive disturbance. They may occur at any age but are found more frequently in young adults. One should always be suspicious of an underlying myocardial condition, and, if not

present in the earlier attacks, should be on guard for its appearance later on. Sometimes little will be found on physical examination, except on ascertaining the rate by auscultation the heart sounds appear short and sharp, very much like fetal heart sounds. In the more severe spells that have been prolonged, aggravated signs may be present, such as cardiac enlargement, passive congestion with bloody sputum, cyanosis, edema, and enlargement of the liver with generalized abdominal tenderness. The history of previous attacks is important, and here, again, electrocardiographic study is invaluable. The outlook may be good, but is always uncertain, there being especial danger where there is evidence of a disturbed circulation present. The condition is compatible with long life, but it is thought that paroxysmal tachycardia will eventually transform into complete arrhythmia or auricular fibrillation. In treatment the patient should be warned to attempt to forego the things that apparently provoke the attacks, such as exertion, digestive disturbances, etc. When these fail to prevent, they are sometimes stopped in the beginning by taking slow deep breaths with the arms extended, or by swallowing several times, especially something in solid form that is a little difficult to swallow. Tickling of the pharynx to the point of nausea has also been recommended. Compression of the pneumogastric nerve, especially the right, has been known to halt the attack in some cases. In the spell that persists, rest in the most comfortable position, forced liquids, sedatives, and sometimes alkalies, are indicated. An ice-cap to the precordial region is often beneficial. Small doses of morphia or phenobarbital are often of benefit. In severe cases about the only drugs found worthwhile are strophanthin or ouabain as intravenous injection. The latter is to be used in a dosage of 1/240 grain every twenty-four hours. The treatment is otherwise entirely symptomatic, with improvement of the general health in between attacks if possible.

Auricular Flutter: This condition is not common, and is sometimes very difficult to distinguish from paroxysmal tachycardia except with the aid of an electrocardiograph. It is nearly always associated with heart block, is more often found in advanced age, more common in males, and usually is associated with arteriosclerosis and more or less severe myocarditis. It usually responds well to digitalis, and, in fact, some authors say that digitalis is a specific for this condition.

Auricular Fibrillation, or complete arrhythmia is distinguished by a constant and relatively moderate acceleration of the beats up to 100 to 120, by a variation in amplitude, and by the length of pause that separates them. It is supposed to be one of the commoner forms of arrhythmia, and is said to compose 40 per cent of the cardiac irregularities, but this percentage is much higher than the experience of the average general practitioner will justify. It may be seen in cases with no apparent cardiac disease, but, as a rule, it appears late in cardiac damage, especially a severe myocarditis, and is often seen in the later stages of a mitral stenosis. Many of the cases, when it appears between the ages of 30 to 40, will present a rheumatic history, the age incidence being from 50 to 60 or later in the nonrheumatic group. It may prove to be of short duration, but the majority are prolonged, going into permanent complete arrhythmia. Symptoms depend largely upon the associated conditions, and in the more severe cases are those of a marked myocardial failure. A rapid ventricular rate increases the distress, and the more rapid the rate the greater is the irregularity. Prognosis should always be guarded, but it is known to be compatible with long life, especially in those cases where the morbid phenomena are limited to the auricle, leaving the ventricle unimpaired. The prognosis is largely determined by influence of treatment. Digitalis should always be instituted, there being an especial indication for its use, as it acts by blocking weak ineffectual impulses. The dosage is decidedly individual, and is determined only by observation. In spite of this treatment the irregularity will often persist, and is relieved more or less frequently by the administration of quinidin, the results obtained varying with the degree of associated cardiac pathology. Most authors caution against the use of quinidin without a preliminary course of digitalis, and say that it is contra-indicated in an active endocarditis, a secondary endocarditis, fever, and the presence of a partial or complete heart block.

Heart Block: This group is caused by a delay in passing, or the blocking off more or less completely, of the impulses, and may occur at any age depending on the cause. It frequently gives a history of infectious diseases, especially rheumatic

fever, diphtheria, influenza, or penumonia. Syphilis may be a factor, as well as any form of myocarditis, either acute or chronic. Temporary block to a varying degree may be caused by the injection of digitalis, adrenalin, etc. Symptoms are variable and are also influenced by associated conditions. Some patients complain only of being dizzy, but weakness with fainting is more common. On examination, by comparing the cardiac contraction by auscultation with the pulse rate, it is evident that many extra-systoles are occurring that do not send impulses to the wrist, or it may be that only part of the beats are dropped, due to partial heart block. This condition should always be kept in mind when one decides to employ massive doses of digitalis. *Stokes-Adams Syndrome,* which accompanies some cases of heart block, should not be confused as being synonymous, and is characterized by three clinical features. There is a slow pulse, which may be permanent, or sometimes falls in paroxysms to 40, 20 or even lower. There may be transient vertigo and syncope with cerebral anemia, and pseudo-apoplectiform attacks or epileptiform seizures. There may be visible auricular impulses noted in the veins of the neck. In heart block there are usually senile manifestations associated with arteriosclerosis, or if found in young adults it is associated with myocarditis or luetic infection. Prognosis is good in infectious diseases, except in rheumatic fever, influenza and diphtheria. In the chronic form the significance is grave, and death may be sudden. In syphilis the treatment is evident, along with rest and general cardiac treatment. Atropine is useful in the type occurring in infectious diseases. Digitalis should be used only with great caution, and massive doses should be avoided. For the syncopal attacks the treatment is entirely symptomatic.

Alternation of the Heart: In this condition the pulse shows alternate strong and weak beats, due to a disturbance in the ventricular systole. It is seen often in very prolonged rapid heart action. It is of very grave significance, especially if found in uremia, pneumonia and severe infections. It is found in lead and strychnine poisoning, and in some patients under the influence of digitalis. Treatment is entirely that of the underlying condition, with prolonged and thorough rest.

Ventricular Fibrillation: This condition is more or less of academic interest, as it is incompatible with life.

Cardiac arrhythmias are important because they are often the first indication of an existing or an impending cardiac pathology. One cannot help being impressed when considering these conditions with the part played by the myocardium in *all* irregularities. Even in the simpler form of respiratory arrhythmia, which is not considered pathological in children, it is noticeable that it appears in adults with suspicion of a weakened myocardium. This tendency of myocardial weakness seems to progress as the more severe forms of arrhythmias are considered in order of severity, until the stage that is incompatible with life is reached. The seriousness of the irregularity seems to depend largely upon the amount of underlying cardiac damage or associated conditions.

The prognosis at best should always be guarded until more complete information is available both from prolonged observation and more detailed examination. In this latter respect electrocardiographic study is invaluable, but beyond the scope of the general practitioner who possesses only ordinary equipment. Emphasis is directed to the fact that treatment now existing shows slight indication of anything specific, and there does not exist a standardized therapy. More often treatment is indicated for the underlying, associated, or causative factors.

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509 Medical Arts.

CONGESTIVE HEART FAILURE.*

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During the past hundred years, there has been a very decided decline in the mortality rate, so that life expectancy has increased from thirty-eight to fifty-eight years. This improvement has been due largely to the prevention and better treatment of the infectious diseases. For instance, tuberculosis in 1900 had a death rate of 201.9 per hundred thousand, and heart disease 123.1 per hundred thousand. In 1924 these figures had changed until tuberculosis was down to 90.6, and heart disease up to 178.4. In 1929 heart disease had increased to 210.8 per hundred thousand. The United States Bureau of Census in 1931 listed 253,985 deaths as caused by heart disease, which is one and one-half times that of influenza and pneumonia (all forms), its nearest competitor, and the deaths from heart disease are steadily increasing. While infectious diseases are steadily declining, the degenerative diseases are almost without exception gaining consistently, and heart disease may well be called the "king of all diseases." Therefore, serious consideration of this problem is appropriate.

The heart muscle, like any other muscle, requires glucose, insulin, and oxygen for its proper work, but it is less tolerant of oxygen debt and more sensitive to lactic acid accumulation than the skeletal muscle. It also may be well to remember that it appears impossible to do permanent harm to the normal heart muscle by any load placed upon it. The vital capacity of the lungs and the sensitivity of the respiratory center to changes in hydrogen ion concentration are safety valves that will stop the whole body before the normal heart muscle is damaged. Acute dilatation of the heart, then, is due either to anoxemia or excessive load on the already damaged heart. Acute dilatation in febrile infections occurs only in the previously damaged heart except in the immediate antemortem state when anoxemia develops.

Heart failure or circulatory failure, as Warfield[1] has admirably pointed out, may well be considered from two points of view. It may be central or peripheral, but too sharp a line of distinction cannot be made between the two. He quotes Wollheim who has divided cardiac decompensation into plus and minus. The plus are those cases in which there is definite increase in blood volume as found in the hypertensives. They are by far the most common, and show a breakdown as a result of excessive strain from the hypertension or in aortic insufficiency or mitral stenosis. The common features are dyspnea, orthopnea, edema, distention of the neck veins, and cyanosis. They are the type that insist on sitting up with their legs hanging down instead of lying flat in bed, thereby reducing from active circulation from 400 to 1,000 c.c. (Wollheim) of blood by filling the subpapillary skin plexuses of the legs.

The chronic minus cases with a definitely decreased blood volume are seen where there is a primary disturbance in the oxygen exchange of the lungs, as in pulmonary stenosis or emphysema or thyrotoxicosis. The acute cases are seen in the toxic infectious diseases and circulatory shock.

Treatment in the plus decompensation cases is aimed at taking the load off the heart by such means as venesection, diuretics, limited carbohydrate diet, digitalis or strophanthin. For the associated sluggish coronary circulation and anoxemia and consequent secondary dilatation, oxygen, glucose and insulin administration is logical.

In the congestive heart failure of the plus decompensation type, Stone[2] and his associates of Texas University discuss the problem of edema seen especially in those cases caused by an increase in filtration through the capillaries resulting from increased venous pressure accompanying congestive failure. They point out that increased permeability may be due to anoxemia or nutritional disturbance in the cells. Impaired renal function may be a very important contributory cause of this edema. The edema itself renders the circulation through the tissues more difficult, thus throwing an additional burden upon the already insufficient myocardium. It diminishes the diffusion of oxygen (Harrison and Pilcher[3]) with a secondary and compensatory in-

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crease in blood volume. At the same time carbon dioxide increases in the tissues. Edema may be a symptom of congestive heart failure. Secondarily, by throwing an additional load on the heart, it may further cause greater heart failure. So the patient with congestive heart failure at rest may suffer both from general circulatory inefficiency and myocardial insufficiency.

Relief of the cardiac insufficiency, then, demands our best efforts to remove the edema. The edema that remains after bed rest and digitalization calls for a consideration of the various diuretic drugs.

Christian[4] says theophylline (theocin) is the most efficient of the xanthine diuretics for oral administration. Doses of five grains, three and four times daily for two to three days, are recommended for the average person. More than that may cause nausea and vomiting. Theophylline ethylene diamine (or thephyldine) given intravenously is considered the most efficacious and safest of the xanthines. The time of onset of diuresis is usually within an hour, reaching the maximum within three or four hours, with the urine secreted at a rate of about 7 c.c. per minute. The complete effect is usually gone before twelve hours.[2]

Mercury as a diuretic in heart disease without kidney damage has been recognized a long time, as attested by the popularity of Guy's pill, but with much kidney damage they may well be omitted. Novasurol is considered the most powerful of any diuretic yet introduced, but, because of its possible toxic effect, such as stomatitis and hemorrhagic nephritis, it has been almost entirely displaced by salyrgan, which is not wholly without possible harmful effects, but usually can be given at frequent intervals over a period of months. Its diuretic effect is slower than the xanthin products, but is supposed to last longer—sometimes even into the second day. The average time of onset after intravenous dose (1½ to 3 grains) is two to three hours, with the maximum 7½ c.c. per minute reached in five to six hours. Since the xanthines produce diuresis by a predominant increase in glomerular filtration, and the mercurials through the tubules, these authors report an increase of diuresis by the alternate use of the two medicines, giving one as soon as the base line was again reached after the first one, and they reported a decided increase of diuresis.

Ammonium chloride in large doses (1½ to 2 drams a day) is a variable and uncertain diuretic. Its effect, which is supposed to be produced by the acidosis following its administration, is best obtained with a salt poor diet and a restricted fluid intake of 1,000 to 1,500 c.c. per day. The combined effect of ammonium chloride and salyrgan has been reported to produce a marked diuresis.

Urea by mouth has been recommended, such as one to two ounces diluted in water or fruit juices, and may be given over a period of two or three years if there is no renal damage. Most effect is reported when edema is marked. The diuresis is probably accomplished by the filtration of increased amounts of urea, with the consequent transportation with it through the kidneys of large amounts of water.

The procedure of mechanically removing fluids by making slight punctures through the edematous skin is an old one, but not much discussed these days. Are we not leaving out a very valuable and simple method in appropriate cases? I recently tried it on a moderately edematous case, and the adjacent swelling diminished rapidly. Dr. Lawson told me yesterday of one patient from whom he had removed about two gallons of fluid in one day by this method. By keeping the puncture holes open, he was able to continue the drainage over a period of several weeks. This is much facilitated by having the feet hang down and the punctures in the more dependent areas.

The diastolic filling of the heart is dependent upon the venous return. Under normal conditions, this is sufficient for proper ventricular contraction. The venous pressure necessary for this venous return is dependent on the vasomotor tone of the peripheral vessels as well as the heart. The amount of blood that is in active circulation is influenced much, of course, by the tone of these peripheral vessels. While it has been shown that the plexus of vessels in the skin is probably the most important depot for holding blood not in active circulation, the splanchnic area is next. This brings up the question, is the failure of the heart the initial circulatory symptom in these cases of minus decompensation as seen in serious infections? In fevers there is low blood volume due to loss of fluid into tissues. These patients lie comfortably flat in bed. There is no distention of neck veins, the blood is

concentrated, there is loss of chlorides in the blood, venous pressure is low, and the condition is quite comparable to that known as secondary shock.[1]

In these infections, the poison resulting from the infections increases the osmotic pressure of the tissues, thus drawing fluid from the capillaries and reducing blood volume. The catabolic changes of the tissues increase the affinity of the tissues for water, reducing blood volume. Because of this, diastolic filling is profoundly disturbed. To compensate, the heart rate speeds up; its nutrition is disturbed and the so-called heart failure thus may be due entirely to the peripheral disturbance. Recovery from the infection then means a return to the normal blood volume, normal chlorides which are so essential for proper phagocytosis, normal concentration of blood and normal venous pressure.[1]

For the acute minus decompensation as is seen in the seriously ill patients of infectious fevers, the treatment is more like that for secondary shock. Digitalis is claimed to decrease blood volume, so it may be said to be contra-indicated except with associated auricular fibrillation. The vasomotor drugs for increasing the circulating blood volume are indicated. Wollheim, from his experiments, claims that strychnine sulphate increases this blood volume by its effect on the vasomotor system and it may be the most useful drug at hand. Warfield has advocated large doses of it, as much as 1/15 of a grain every hour or two. Caffein and camphor are also reported to increase blood volume and in addition stimulate the vaso-constrictor center. Intravenous doses of saline or glucose or a combination of the two with adrenalin helps much. The introduction of fluids intravenously is the most logical and satisfactory method of increasing blood volume. Since a normal individual loses about three liters of fluid daily[1]—and in the presence of infection mild dehydration may be serious—these fluids should be given perhaps several times a day. Because of the fact that the saline and glucose fluids do not remain in the blood long, their effect is not lasting. To offset that, blood transfusions offer a better solution. This blood, which contains colloids that will hold the blood in the vessels longer, maintains the increased blood volume a longer period of time. In addition, it introduces important ions, such as Ca, Na, K., and adds oxygen carrying blood cells. The saline helps to restore the blood chlorides, thus increasing the phagocytic power of the blood, while the glucose, of course, makes readily available more nutrition for the tired heart muscle. Generally a sensible treatment, then, would suggest for the ordinary case about 500 c.c. of blood every three or four days with daily injections of glucose, about 10 per cent, with saline, about 3 or 4 liters per day, which should be given slowly and reduce the possibility of "speed shock." Another point to emphasize is that the average individual can take about 75 gms. glucose per hour from the circulation, so that concentrated glucose solutions given at a rate faster than that would probably lose a considerable amount of the sugar by filtration through the kidneys. While in hospitals a concentration of more than 10 per cent may rarely be needed or advised, there may appear emergencies in the homes where a concentration as much as 50 per cent may safely be given in small amounts and slowly. I have many times found it very handy in diabetic emergencies in the home. I have seen no injury to the vein used, and, even if so, that is a small matter for consideration if a life may be saved by it.

Remember that the heart muscle demands a good supply of glucose for its action, and in diseased conditions where there is a disturbance of the blood supply to the muscle through the coronary circulation, such as in the presence of infection or particularly in the cases of minus decompensation, special emphasis must be put on supplying sufficient glucose to that heart muscle, with oxygen and insulin added as the case may indicate.

In our concern for the failing heart, let us not forget that this failing heart may be due to, and many times is secondary to the peripheral circulatory failure, and emphasis, therefore, must primarily be put on increasing blood volume, increasing blood chlorides, and raising the venous pressure. Our chief medicines are those that stimulate vaso-constriction and fluids introduced to increase and maintain proper blood volume.

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CORONARY THROMBOSIS.*

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Coronary thrombosis, as we all know, is due to sudden occlusion of one of the main branches of the coronary arteries. The right supplies the right ventricle and auricle and the posterior part of the inter-ventricular system. The left supplies the left auricle and left ventricle.

ETIOLOGY

Etiology is not definitely known. The majority of cases occur between 50 and 60 years of age. Males are much more frequently affected than females. Hypertension is present in a large percentage of cases; although tobacco, exercise and food are not thought to be causative agents.

SYMPTOMATOLOGY

Pain is the most constant symptom. It is sudden and of great intensity, and persists for several hours. It is retrosternal and is often referred to the left shoulder and arm. It is not relieved by nitrites, but requires large doses of morphine.

The patient's skin is pale and the lips may be slightly cyanotic. The respiration is rapid. Often there is profuse sweating and vomiting, and there may be suppression of urine. They are very anxious and fear impending death. There is a marked drop in blood pressure and a leukocytosis. Rales are heard at the bases of both lungs, suggestive of pulmonary edema. The pulse varies a great deal in different cases. It may be very rapid and weak, and it may be slow, suggestive of heart block. In a few cases the pulse is so nearly normal that it may be very confusing and mislead one as to the true nature of the condition. The temperature is usually elevated to a slight degree during the first twenty-four or forty-eight hours. One to two degrees is, as a rule, as high as it goes, and this may persist for several days.

An examination of the heart does not reveal, as a rule, the changes that one would expect from the severity of the symptoms. In some cases, to be sure, there will be auricular fibrillation, or paroxysmal ventricular tachycardia, but the most frequent finding is a heart with feeble sounds and occasional arrhythmia. After a few days a pericardial friction rub may be heard.

Electrocardiographic changes are not sufficiently positive for several days to rely on this method for a positive diagnosis in the early stage.

DIFFERENTIAL DIAGNOSIS

Coronary thrombosis may be confused with angina pectoris. The pain, although similar in location and other respects, is not relieved by nitrites, and it persists for several hours, while the pain of angina seldom persists for more than a few minutes before relief is obtained. Thrombosis usually occurs while the patient is at rest and not undergoing any unusual exercise. Forty per cent of the cases of angina later develop coronary thrombosis.

Acute surgical conditions of the abdomen, such as gall-bladder colic, acute pancreatitis, perforated gastric or duodenal ulcer, have to be considered from the symptoms present. The absence of distention and localized areas of tenderness and muscular rigidity, together with symptoms referable to the heart, are usually sufficient to rule out an abdominal condition, although it is not unusual for some of these cases to go to operation.

Pneumonia and pleurisy are sometimes suspected, especially if the patient happens to be convalescing from a respiratory infection when the attack begins. The rales are usually heard at the bases of both lungs in thrombosis, and the other physical signs of pneumonia are absent. Spontaneous pneumothorax and pulmonary infarction may cause pain and other symptoms similar to thrombosis, but, as in pneumonia, a careful physical examination will eliminate them.

COMPLICATIONS

According to Ross Patterson,[1] important complications are as follows:

1.—Rupture of the heart, occuring from the fifth to fifteenth day.

2.—Rapidly developing acute congestive heart failure with enlargement of liver and spleen.

3.—Embolic phenomena after the first week, the

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site being the brain, lungs, kidneys, spleen or extremities.

4.—Suppression of urine.

5.—Disturbance of the heart beat, such as heart block, auricular fibrillation, paroxysmal ventricular tachycardia, and ventricular fibrillation.

PROGNOSIS

The average length of life after an attack is between two and three years. One case has been reported that lived for eighteen years. Cases having hypertension and marked arteriosclerosis have a poorer prognosis. About 40 per cent have a recurrence at a later date.

TREATMENT

As soon as the diagnosis is made, the patient should be given ¼ grain of morphine. This should be repeated at half hour intervals until the pain is relieved. It may be necessary to give as much as 1 grain within an hour or two. Glyceryl trinitrate should not be given. If the shock is great and a collapse extreme, epinephrin should be given.

The patient should be at absolute rest, warmth applied and fluids forced. Sweet fluids, such as lemonade, milk and orangeade should be given freely. Dextrose solution has been given intravenously with good results, 50 to 100 c.c. of a 50 per cent solution to be given daily.

Digitalis should only be given to cases of persistent auricular fibrillation.

Oxygen inhalation with the patient in a tent is very beneficial to those cases of marked dyspnea and cyanosis.

Caffein sodio-benzoate is also used for certain cases who have respiratory distress.

Rest in bed should be continued from four to six weeks.

Not infrequently glycosuria is discovered following an attack of thrombosis. This should either be overlooked for the time being, or handled by means of regulating the diet. Do not give insulin. It has often caused fatal results.

If a four plus Wassermann is discovered following an attack, no intravenous medication should be given. After two or three weeks it is safe to give potassium iodide and mercury by mouth.

Levine[2] says epinephrin is of great value where a complete heart block develops.

Cases of paroxysmal ventricular tachycardia should be given sufficient doses of quinidin sulphate to slow the heart. Start with 5 grains and increase every four hours until results are obtained. The dose may be increased to 15 grains.

When the patient is sufficiently convalescent to get out of bed, he should be allowed to sit in a chair fifteen minutes to one-half hour the first day. The time he is allowed out of bed should be gradually increased for the first week until he has remained up most of the day. He should be cautioned against any undue physical or mental exertion. He should be advised against violent emotional upsets, and, if possible, train himself against violent outbursts of anger. All foci of infection should be removed.

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COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS.*

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During the past few years surgery has been rapidly coming to the front as offering us more hope in handling pulmonary tuberculosis, and at the present time much is being said and written about it, chiefly by the surgeons. It is our purpose herein to give some of the reactions of the medical man to this relatively new mode of treatment, bearing in mind that the very youth of the movement necessitates frequent change in those reactions and knowing therefore that they are far from permanent. Recent advances in surgical treatment have made a profound impression upon us and convinced us that

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the surgeon does have something quite definite to offer; especially is this true of thoracoplasty.

For some time past every patient admitted to Catawba Sanatorium has been considered for collapse therapy. On October 4, 1934, there were 298 patients in the Sanatorium, of which number 275 were diagnosed pulmonary tuberculosis; 63.6 per cent of the 275 had been given some form of collapse treatment and in many of them more than one form had been used.

In these brief remarks we shall confine ourselves to those methods of collapse therapy that have been used upon our patients sufficiently for us to be familiar with their advantages and limitations, viz., artificial pneumothorax, with or without pneumolysis, phrenic nerve interruptions, and thoracoplasty.

Artificial pneumothorax has been used at Catawba Sanatorium since 1912. It is generally recognized as the method of choice in collapse therapy and is far more widely utilized than all other methods combined. So completely has it become accepted that little is being said about it today, not enough we think in view of the fact that many practitioners are not yet familiar with it in detail. Therefore, a slight digression to bring it to your attention. The technic is quite simple and the requisite skill may be acquired by any physician who will take time to study the method. The apparatus is inexpensive, if home-made, which we think is better than the manufactured, and is easily kept in working order. A special needle tends to insure success and helps in avoiding accidents. Suitable cases are selected on a basis of clinical, physical, X-ray, and laboratory findings. Indications for pneumothorax are: (1) unilateral tuberculosis, with or without cavity; (2) hemorrhage cases; (3) bilateral tuberculosis with slight involvement in one lung and more extensive in the other, especially where one lung is apparently quiescent and the other active; (4) bilateral pneumothorax may be used in a few selected cases where there is cavitation or considerable involvement in both lungs; (5) as a palliative measure to relieve symptoms and prolong life and make the patient more comfortable in some selected cases of extensive bilateral tuberculosis; (6) positive sputum cases, where a partial or complete collapse will probably render the sputum negative. Therefore, it is used variously as a curative or palliative measure, as a means of controlling hemorrhage, or rendering the sputum negative. Suffice it to say that results along all of these lines have been most gratifying.

The accidents to be avoided are comparatively few but can be quite distressing. They consist of: (1) entrance of the needle into a vessel of the lung, producing hemorrhage or injection of air into it, resulting in air embolism; (2) pulling an adhesion loose at its visceral end which allows air to enter the sac from the lung, constituting spontaneous pneumothorax, or allows bacilli to enter the sac, giving rise to intractable empyema; (3) exerting sufficient pressure to cause mediastinal hernia; (4) air embolism from other causes. Obviously any active treatment which is to extend over a period of months will at times demand niceties of judgment. Close observation with repeated fluoroscopic examinations seems to us almost mandatory and this is one of the reasons that we recommend sanatorium residence for these patients, at least for the first few months. When to stop the treatment and allow expansion of the lung is much more difficult to decide than when to start. Ordinarily collapse of the lung should be continued for a period of from six to thirty-six months; some cases can be benefited by a shorter period of collapse than six months, and a few cases will require a longer period of treatment than thirty-six months.

The cause of failure to obtain satisfactory collapse of the lung in these cases is practically always interpleural adhesions. In certain selected cases where this is true we have found internal pneumolysis a valuable procedure in dividing the adhesions to permit collapse. In capable hands much can be accomplished and the risk of accident is slight.

With us phrenic nerve interruption is used as a substitute usually, in place of pneumothorax where dense adhesions obviate any collapse, and in place of thoracoplasty where this operation is not practicable. In addition to these it sometimes alleviates the symptoms in hopeless cases, making more comfortable the patient's last days. In recent years there have been no unusual number of accidents or definitely bad results and we think it has been a worth while procedure. We do not assign to it any great curative value and prefer more active collapse measures when they can be employed, especially if attempt is being made to close cavities. Phrenic nerve interruption can be used to obtain temporary

or permanent paralysis of the diaphragm. Some are recommending almost entirely a temporary phrenic nerve interruption to be followed by a permanent interruption later on if it is indicated.

Up until a few years ago the mortality rate in thoracoplasty was so high that we recommended its use very infrequently, but recently rapid strides have been made in overcoming this and in producing more nearly perfect collapse. It is to be used chiefly for the purpose of closing cavities and only upon patients who have a chance of returning to some degree of activity afterward. Consisting as it does of from one to five major operations, each one potentially fatal, it is to be advised with intimate knowledge of the individual and upon consultation between the man who has this knowledge and the surgeon who is to operate. Correctly handled in properly selected cases, its field of usefulness is broad and the results obtained may be excellent. We are expecting this improved thoracoplasty to become a boon to victims of tuberculosis and think a great deal of credit is due those surgeons who have developed it, sometimes helped by the medical men, often hindered by their skepticism.

Collapse therapy plays an important part in the present-day treatment of pulmonary tuberculosis and every victim of the disease should have the benefit of being considered for it.

Of the means used artificial pneumothorax is most widely applicable and deservedly holds first place. It may be profitably supplemented by pneumolysis.

Phrenic nerve interruption is useful where other measures are impracticable, and at times as a palliative.

Thoracoplasty with its recent improvements adds renewed hope and should be used more extensively. Close cooperation between phthisiotherapist and surgeon is imperative.

DISCUSSION

DR. E. C. DRASH, University, Va.: Dr. Nicholls has given a very clear and concise summary of the present-day concept of the various types of collapse therapy utilized in the treatment of tuberculosis. He is to be congratulated on the splendid showing which has been made in the percentage of collapse therapy being used at Catawba Sanatorium.

It might be interesting to note that I have just returned from a two weeks' study of the method being used in Michigan. The State of Michigan has probably the most efficient system for the study and care of tuberculosis of any State in the Union. Dr. Alexander, of the University of Michigan, tells me that the Michigan State Sanatorium is applying collapse therapy (which includes pneumothorax and all types of surgical procedures for collapse), to 91% of their patients.

Dr. Nicholls has mentioned that the concepts in regard to various types of procedure are constantly being changed and varied. This is probably most striking at the present time in regard to operations on the phrenic nerve. This has gradually changed so that the majority of operations on the phrenic nerve now consist of crushing of the main trunk and resection of the accessory, to produce only temporary paralyses of the diaphragm. There are many cases in which a permanent paralysis of the diaphragm is either unwise or unnecessary. Evulsion of the nerve also presents certain dangers even when a permanent paralysis is desired. The temporary paralyses of the diaphragm may be repeated several times if necessary, or may later be made permanent.

As far as thoracoplasty is concerned, the newer methods permit the closure of far more cavities than could be closed by the older methods. Also the mortality is being tremendously reduced, and the results improved.

The last case Dr. Nicholls discussed is an excellent example of a patient who has been on the cure in various institutions for a period of almost eight years. Thoracoplasty has put that patient on her feet. Eight years in sanatoria is a tremendous economic burden on the State which pays part of the expenses and on the patient's relatives.

The patient is now no longer a burden to the State and her family. She is sputum free and no longer a menace to her people nor a public health problem.

DR. C. P. CAKE, Washington, D. C.: I wish to thank Dr. Nicholls and Dr. Broome for their very excellent presentation of this timely subject. I suppose there is no doubt that there has been no greater advance in the treatment of tuberculosis, since the introduction of the rest cure, than collapse therapy. The surprising thing about it is that although the practicability of pulmonary collapse was demonstrated by James Carson, in 1821, it has been only in the last three decades that this form of treatment has obtained recognition and approval in the treatment of human tuberculosis. Whereas formerly we used to more or less timidly ask ourselves if perhaps we might use collapse therapy in a given case of tuberculosis, I believe today we have to stop and consider if perhaps there might not be some contra-indication for its use.

Now that this method of treatment has been proved to be of benefit, the question arises, at what time during the course of the disease should it be applied? I believe the answer to this is, as soon as possible. Of course, we know there are many cases of early tuberculosis that will clear up on bed rest alone, but we also know there are many others that continue to progress in spite of that bed rest. There is a time in the course of almost every case of tuberculosis that collapse therapy offers hope of benefit. If we allow our patients to continue beyond that stage, we have been

derelict in our duty to them. Then, too, since we have no criteria for determining with accuracy which way a given lesion is going to go—whether it is going to clear up or is going to progress—if we want to do the greatest good to the greatest number we should consider collapse in every case of tuberculosis as soon after the diagnosis has been made as possible.

Another argument for using collapse therapy early is that the earlier it is begun the simpler the methods that will have to be employed to effect a cure. I submit that it is more conservative to apply artificial pneumothorax or phrenic nerve interruption in the early stages of a patient's disease than to expose him to the danger of his disease progressing to a point where only a complete thoracoplasty offers hope, or there is no hope.

Then, too, the economic factor should be considered. Patients have sometimes been condemned to long periods of disability which perhaps might have been shortened by months or years if collapse therapy had been employed in their treatment. Of course, as was said, some patients will get well without anything but bed rest, but we also know that even these patients will get well more quickly if their rest is supplemented by some form of collapse therapy. The economic side of tuberculosis presents a very real problem, and if we can do anything to shorten the period of disability we owe it to our patients and to the community to do so.

DR. DEAN B. COLE, Richmond: I wish to congratulate Dr. Nicholls and Dr. Broome for their splendid presentation of a most excellent paper. I am indeed sorry that so few physicians are present to hear this timely presentation.

During the past sixteen years I have witnessed the evolution, if not the revolution, of the treatment of tuberculosis. As the result of the development of collapse therapy, especially the wide use of pneumothorax, the outlook of the tuberculous patient has changed from an uncertain type of hopelessness to a rather definite, favorable prognosis. The mortality from this disease has shown a gradual and rather constant decline and this alone is worth the effort, but this is just a small part of the story. Thousands of patients who were formerly condemned if not to death, to invalidism or semi-invalidism, are now wage earners and consequently an asset to themselves, to their family, to their community, to their state, and to their country. Also the prognosis has changed from one of the most hopeless to one of the most hopeful of the chronic diseases. Through the closure of cavities, we have been enabled to free most patients of tubercle bacilli and a great many of them of sputum. When this is done, these patients may be at home or at work without endangering the health of those with whom they come in most intimate contact. For this reason collapse therapy, and especially pneumothorax, is one of the greatest of the public health measures for the control of tuberculosis.

Dr. Nicholls' report of sixty-three per cent of patients at Catawba Sanatorium that were receiving some form of collapse therapy is most encouraging. Some sanatoria report as high as ninety to ninety-two per cent of all patients receiving some form of collapse therapy. Time may prove that this percentage is too high, but personally I doubt it. An adequate collapse therapy program will permit patient to be admitted to a sanatorium for a short time, a few weeks, at most a few months, when, after pneumothorax has been successfully instituted and the patient has had sufficient time to become stabilized, he may be permitted to return home under his own physician and his bed at the sanatorium made available for someone else. I also believe that arrangement should be made to re-admit these pneumothorax patients on short notice, or even without notice, should complications arise and necessity demand it. If this can be done, both patient and physician will have a sense of security in handling these pneumothorax patients that is not otherwise possible. Through such a program I believe it is possible to accelerate the turn-over in tuberculosis sanatoria to two or three times its present rate. This is not a theory, but a practice that has already been established at Pine Camp Hospital, and elsewhere. Many of these patients are earning their livelihood in factories, offices, and elsewhere.

For the past ten years we have had a rather intense collapse therapy program, especially concerning the closure of cavities. The success of this program has been made possible through the co-operation of Dr. Frank Johns, who has been willing to undertake operations that were not orthodox, but have since become recognized. I refer especially to apical and upper lobe thoracoplasties for the closure of cavities.

In closing, I would like to add one indication for pneumothorax, which, by thoracic surgeons as standard surgical procedures, Dr. Nicholls failed to mention—that is for the relief of pain. In cancer of the lung I know of no procedure that is even comparable to pneumothorax for the relief of pleural pain. If this is done early, the patient will be saved much suffering. We have followed this procedure for more than seven years and after this experience commend it to be used.

DR. W. E. BROWN, Blue Ridge Sanatorium: I have very little to add to what has been said here today, but I should like to re-emphasize the fact that selective collapse of the diseased portion of a lung gives us the most definitely beneficial therapeutic measure that has been brought out since general rest was demonstrated as the proper method to treat these patients. Also, I should like to say this: that I feel there is possibly a little too much surgery being practiced on some of these cases. I think that the cases should be selected with certain definite points in view. The type of lesion should be considered. If it is of a progressive type, from the X-ray standpoint or from the symptomatic standpoint, or if there is a cavity present, or a softening process going on, I think collapse with pneumothorax is indicated; but I can not bring myself to feel that the early exudative lesion should be collapsed when first discovered. I think that those patients ought to be put to bed and kept under close observation. Their symptoms should

be observed and evaluated; they should have frequent X-ray films taken of the chest; and the progress of the lesion should be carefully noted. If under proper bed rest we note a retrogression of the lesion then we have saved that patient a lot of trouble and grief by not putting him through a surgical collapse. Dr. Nicholls well said that the hardest point is to know when to stop treatment, and I should say that this is true. It is easy enough to decide, usually, when to collapse. But why subject a patient to two or three years of pneumothorax treatment if you find that six to eight or ten or twelve months of rest will get the lesion to a good state of quiescence and enable the patient to go along comfortably and not be a danger to those with whom he comes in contact? I confess that is my policy now. I do not think we have a right to challenge every unilateral lesion until we have studied the case and have come to a definite conclusion as to whether or not this patient will improve without surgical interference.

DR. [illegible]: I should like to ask Dr. Nicholls a question about the age—whether he has had any case over fifty.

DR. NICHOLLS, closing the discussion: The majority of our patients are young adults. The patients range in age from fifteen or sixteen to old age. We have used pneumothorax treatment in patients over sixty.

DRUG IDIOSYNCRASY AND NEUTROPENIA.*

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The literature of the latter part of 1933, and of 1934, abounds in case reports of neutropenia due to various drugs.

It has long been known that various chemicals would depress the marrow function, resulting in complete inhibition of either erythropoiesis, granulopoiesis and thrombopoiesis, or all combined.

In 1910, Selling[1] reported observations on three girls who had been working in a rubber factory and were suffering from benzene poisoning, characterized by "agranulocytosis" and complicated by purpura and hemorrhages. One of them had quit her work long before, illustrating the cumulative and delayed effect of benzene on the hematopoietic tissue. This is a most important point to bear in mind in connection with the coal tar drugs. Later, Selling[2] experimented with benzene as a leukotoxin. He injected benzene subcutaneously into rabbits, and demonstrated the production of leukopenia with little effect on the erythrocytes. Kracke[3] has also shown that benzene may be introduced into rabbits in such small doses that it exerts a selective affinity for the granulopoietic tissue only, leaving the erythrocytes and thrombocytes relatively undisturbed.

Farley,[4] in 1930, reported his review of the literature and cited thirty-nine cases in which the function of the bone marrow was depressed following the use of various preparations of arsphenamine. Since that date, I have found twenty-eight additional cases recorded, making a total of sixty-seven. In these cases the symptoms vary from those of purpura hemorrhagica to those of severe aplastic anemia and malignant neutropenia, depending on whether the principal effect is on the granulopoietic, megakaryopoietic or erythropoietic tissues, or on all of these combined.

The toxicity of organic gold preparations has also been shown. Injections of these preparations will produce a condition closely simulating, if not identical, with primary neutropenia. These cases were reported in France where these drugs are being used quite extensively.[5-11]

Four cases of neutropenia are reported due to dinitrophenol.[12-15] This drug is used to speed up the metabolism and reduce excess weight and was being used for this purpose in these patients. It is interesting to note, in this connection, that as early as 1918, this drug was reported as a dangerous occupational poison.[16]

It is important to observe that the above drugs are capable of producing a type of bone marrow depression restricted chiefly to the granulocytes to such an extent that the clinical syndrome resulting cannot be differentiated from true primary neutropenia.

Since it is known that neutropenia can be produced with arsphenamine preparations, certain organic gold preparations and dinitrophenol which contain the benzene ring, and with benzene itself,

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it immediately becomes evident that many drugs containing the benzene ring will fall under suspicion until they are definitely eliminated either by experimental work or clinical evidence.

It had been observed for some time that cases of neutropenia were occurring principally in physicians, members of physicians families, nurses, patients under physicians care, hospital employees, and that it was confined almost exclusively to the white race and people in well-to-do circumstances. Kracke and Parker[17] conducted a statistical study of several of these groups with particular reference to the usage of drugs containing the benzene ring. They found that three out of four nurses who need an analgesic would select a drug containing the benzene ring and three out of five physicians would use the same drug, whereas only one white layman out of four and one negro out of eight would use these drugs. They, therefore, felt that this disease owed its high incidence in nurses and physicians to their indiscriminate use of drugs of this class.

There are one hundred and seven cases of neutropenia reported in the literature and attributed to the use of drugs other than arsphenamine, gold preparations, dinitrophenol and benzene. The following table gives a list of these cases with the drug suspected.[12, 17-32]

Number of Cases	*Drug Suspected*
13	Amidopyrine or its combinations
63	Amidopyrine
10	Amidopyrine and a barbiturate
1	Amidopyrine plus other drugs
2	Amidopyrine plus allonal
1	Amidopyrine plus empirin
1	Amidopyrine plus phenacetine
1	Amidopyrine, empirin and allonal
1	Coal tar drugs (kind not stated)
2	Phenacetine
1	Acetanilid
11	Barbituric acid derivatives

It can be seen from this table that about one-half of the cases are attributed to amidopyrine alone; about four-fifths of the cases are attributed to amidopyrine plus other drugs, and that ninety-six of the one hundred and seven cases are attributed to drugs containing the benzene ring. All of the patients listed in this table used drugs containing the benzene ring except the eleven who used barbituric acid derivatives. (Barbituric acid is not a benzene derivative.) It is probable, from the evidence at hand, that barbituric acid derivatives alone are not capable of depressing the granulopoietic tissue, so that these cases were probably due to some other cause.

Since amidopyrine heads the list of drugs suspected, a review of the history of this drug may be of interest.

Amidopyrine, prepared by Stolz in 1895, was patented in Germany in 1897 under the proprietary name, "Pyramidon." Pyramidon has been on the American market for at least twenty-five years. Under the pharmacopoeial designation "amidopyrine," the drug has been marketed by American manufacturers for approximately twelve years, i. e., since 1922. During these twelve years amidopyrine has been put on the market in combination with various other drugs. The following tables are interesting in this connection:

Year	*No. of cases reported*
1902-1922	6 (Approx.)
1922-1927	43 "
1927-1931	107 "
1931-1934 (June)	827 "

1922 TO JUNE, 1934

United States	531 (Approx.)
Germany	365 "
France	17 "
England	9 "
Italy	53 "

The prevalence of the disease in Germany and the United States is said to approximate the use of coal tar drugs in these two countries.

From experimental work carried out on drugs of the coal tar series, Kracke and Parker[17] state that there are certain ones, the reactions of which set them apart from other coal tar derivatives, such as aspirin, etc. These particular drugs all have as a nucleus the benzene ring with an attached amino ($-NH_2$) group, making them substituted amines. They have arbitrarily designated these compounds as benzamine drugs. The drugs contained in this group are *amidopyrine, phenacetine, acetanilid, arsphenamine, neoarsphenamine,* and those proprietary preparations which contain one or more of the above-mentioned drugs.

By referring to the graphic formulae of drugs that have been designated as myeloid depressants and to have produced neutropenia, it can be seen that the only thing common to all of these drugs is the benzene ring. It seems, therefore, apparent that it is not the amino group nor any of the other radicles attached to the benzene ring nor the benzene ring itself which makes them myeloid depressants, but more probably it is the way in which they

are oxidized in the body of an individual with an idiosyncrasy to the drug and a hypersensitive bone marrow.

Benzene and the drugs designated as benzamine drugs are oxidized in the body to catechol, hydroquinone, para-quinone, ortho-quinone, and their therapeutic effect is based on one or more of these oxidation products. It is believed that it is one or more of these oxidation products which depress or injure the myeloid tissue. Neutropenia seems only to be produced by these drugs in susceptible individuals. The question arises as to whether they are oxidized differently in susceptible individuals.

Kracke and Parker injected rabbits subcutaneously with benzene and olive oil and eighteen hours later analyzed the tissues from the site of the injections. Benzene was present only in traces, while phenol and catechol (oxidation products of benzene) were present in considerable amounts. Bone marrow from these animals was analyzed and showed the presence of phenol and catechol but no trace of benzene.

Madison and Squier[22b] and Benjamin and Biederman[31] have produced neutropenia four times in three patients who had recovered from an attack of neutropenia thought to be due to benzamine drugs, by administering small doses of amidopyrine. In these patients, symptoms became prominent in from one to three hours after ingesting the drug, chills, rise in temperature, headache, backache and nausea being the most prominent early symptoms. Sore throat, sore gums and prostration appeared later. In the first patient, three hours after taking ten grains of amidopyrine, the total leukocyte count fell to 1,700, with 50 per cent granulocytes; in twenty-four hours the total leukocyte count was 1,000 with 56 per cent granulocytes. In the second patient, twelve hours after taking five grains of amidopyrine, the granulocytes had almost completely disappeared from the blood stream. In the third patient, two hours after taking seven grains of amidopyrine, the total leukocyte count fell from 6,850 to 3,200; in twelve hours it had fallen to 1,200. After this patient's blood picture had been normal for some time, five grains of amidopyrine was given with the same results. Fitz-Hugh[32] gives the report of a patient who had profound neutropenia thought to be due to amidopyrine. A week after hematologic and clinical recovery, the patient was given one five-grain tablet of amidopyrine with an ensuing loss of more than one-third of the circulating neutrophils in three hours. One of the patients in my series of cases who had had three acute attacks of neutropenia and whose blood picture had been normal for two months, took ten grains of sodium amytal compound (contains seven grains of amidopyrine). Chilly sensations and headache were experienced for fourteen hours, followed by severe chills and a temperature of 101° F. The total white cell count, which had previously been normal, fell to 1,475, with 20 per cent granulocytes, thirty-four hours after ingesting the drug. This makes a series of six experiments on five patients in whom neutropenia has been produced with amidopyrine.

Acetylsalicylic acid, alurate (a barbituric acid derivative), and amytal were given to two of the above patients with negative results. These drugs can, therefore, be excluded as myeloid depressants, they having failed to produce neutropenia in known sensitive individuals.

Experimental work on rabbits with these drugs has not been entirely successful, only an occasional rabbit developing leukopenia and neutropenia. This work has been done principally by Madison and Squier,[22] Hoffman and his co-workers,[12] and Kracke and Parker.[17] Failure to produce neutropenia in all rabbits intensively treated with these drugs may be due to the fact that only an occasional animal may have a hypersensitive granulopoietic tissue.

The observation of Selling, that benzene has a delayed and cumulative effect, leads to the speculation that this may explain the increasing number of cases of neutropenia. Madison and Squier reported the history of a patient who had taken amidopyrines for tic douloureux for ten months and then developed neutropenia. Other patients are reported to have used amidopyrine over a period of years before developing neutropenia. It seems possible that some patients may use these drugs over a long period, weakening the granulopoietic tissue from month to month, or year to year, until one more dose, or series of doses, brings on a fulminating attack which may or may not be fatal.

From the material reviewed it seems apparent that the bone marrow and blood changes in many cases of neutropenia are the result of repeated administration of certain drugs containing the benzene ring to which the patient has developed a hypersensitivity. Much more clinical and experimental work

will be necessary to definitely settle this question. It is suggested that further careful studies should be made of all cases of neutropenia with particular reference to a history of the taking of drugs which are in any way likely to be at fault. It must be remembered though, that in taking histories on any one hundred consecutive patients, a history of the use of coal tar drugs could probably be elicited from the majority. We must not be led astray by this history and come to the conclusion that the neutropenia in any given patient has followed the use of these drugs. There are many cases definitely known not to be due to drugs of any kind. Also, many patients use these drugs to excess who never develop neutropenia. If some cases of neutropenia are due to these drugs, and it is certainly evident that some are, then we must assume that the neutropenic syndrome represents the outward manifestation of an idosyncrasy to certain drugs on the part of patients with a primary dysfunction of the bone marrow.

Assuming that certain benzene drugs are an etiologic factor in neutropenia, the question arises as to whether it is necessary to stop their general use, or modify it. Certainly emphasis is to be placed upon the conviction that the use of such potent therapeutic agents should at all times be under the direct supervision of a physician. The indiscriminate and unnecessary administration of these drugs, and the self-administration by the public is certainly dangerous and should be discouraged. Probably the safest course to follow is to use drugs such as acetylsalicylic acid, one of the barbiturates, or codeine, if any of these are just as effective for any particular symptom. If, however, certain of these benzene drugs are found to be unrivaled in their action for a special complaint, they should not be administered for any great length of time as a routine, or in large doses, unless it is possible to make a leukocyte and differential count on the patient at frequent intervals. These precautions are suggested, not because the occurrence of neutropenia is frequent, but because, when it does occur, it is an extremely serious accident.

At this point it might be well to speak of these drugs in connection with other diseases. We frequently see a patient with a severe infection, and a satisfactory leukocyte response, suddenly developing a leukopenia, and we assume that this is the patient's reaction to an over-whelming infection. In such cases the prognosis is grave. It would then seem wise not to administer these drugs, known to be myeloid depressants, to patients with severe infections, as, if they have an idiosyncrasy for these drugs, they will be much more likely to develop leukopenia.

In summarizing the information concerning amidopyrine and the production of neutropenia, we are confronted with the following facts: That neutropenia is more prevalent in the two countries (Germany and the United States) where amidopyrine is used most extensively; that it is more prevalent in the class of people who use this drug most indiscriminately; that neutropenia has increased concomitantly with the increase in the sale of this drug; that it definitely has produced neutropenia in susceptible individuals, and that it has produced neutropenia in an occasional rabbit intensively treated.

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DISCUSSION

DR. HARVEY B. HAAG, Richmond: Dr. Beck's comprehensive and very detailed description of the neutropenia which so frequently apparently follows the use of amidopyrine leaves little of significance for me to add. I do think it is interesting, however, to note the change of attitude that has taken place concerning our opinions regarding acetanilid. I know for many years acetanilid was looked upon as being the most dangerous of this group of coal-tar derivatives. Yet in recent years animal experimentation, as well as clinical findings, indicate that acetanilid is no more dangerous than amidopyrine, or even as dangerous.

Just a word concerning some methods of treatment suggested for neutropenia. Mild doses of X-ray have been suggested, but this procedure has been criticised on the ground that it might produce the very condition it is called upon to treat. Liver extract has been used. Fetal calf liver has been suggested as being particularly beneficial—and, probably, particularly scarce. Repeated blood transfusions have been suggested, especially in those cases associated with severe anemia. Some of the results of transfusions are encouraging; others are not. For several years it has been felt that leukocytes disintegrate somewhere in the system and produce certain substances that stimulate the bone marrow to produce white cells. These substances appear to be derivatives of nucleic acid. So now we find nucleic acids, or, better, neucleotides, being used in attempting to stimulate leucocytic production. Whole leukocytes, also, are being used. Other nucleic-acid substances, particularly guanine are likewise being recommended. Another treatment followed is the use of K-96, a pent-nucleotide which was evolved in Boston, at Harvard. It is prepared from yeast and has a high conten' of neucleotide. The mortality of those cases treated with this pent-nucleotide is much lower than the percentage treated by any other procedure.

EVIPAL ANESTHESIA.*

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and
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The intravenous administration of an anesthetic is not a recent achievement, but its use has been attended with complications or accidents that have dampened the enthusiasm for this means of producing surgical narcosis. One of the latest, and perhaps the most satisfactory drug that has been used for this purpose is Evipan, or Evipal, as it is known in this country.

Evipal is of German origin, a barbiturate, and chemically known as sodium N-methyl cyclohexenylmethyl barbiturate. It has been thoroughly tested experimentally and chemically abroad, particularly in the country of its origin, and the reports indicate that it has a wide margin of safety. It is reliably reported that three and one-half to four times the anesthetic dose is the lethal dose. Evipal anesthesia has been administered many thousands of times and the reported deaths have been very few. The London (England) Anesthetic Committee of the Research Council gave a most favorable report and stated that only one death in 25,000 administrations came to its notice. This compares favorably with any other anesthetic agent in common use today.

Evipal differs from most of the other barbiturates

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in its prompt elimination. It is said that it is detoxified almost exclusively by the liver and the action is very rapid; for this reason it is not administered in any disease of the liver in which the function of that organ is impaired. Impressed by the reports of investigators abroad, we began its clinical use in December, 1933.

We kept accurate and rather full notes on one hundred consecutive cases in the Gallinger Municipal Hospital and feel that we have acquired a working knowledge of the administration and clinical behavior of Evipal.

It should be stated in advance that while the anesthesia is complete, that is, to the surgical degree, it is of short duration and was used only in those cases, with few exceptions, in which such a type of narcosis was indicated. The following covers the preparation of the patient, the technique of administration and observation of the patient, during and after narcosis:

The preparation of the patient should be the customary one, and in addition ¼ gr. morphine sulphate with or without 1/150 gr. of scopolamine, should be given by hypodermic one-half to three-fourths of an hour before the time set for the operation, assuming we are dealing with the average adult.

Evipal solution is prepared by dissolving 1 gramme of Evipal (a white powder) in 10 c.c. of distilled water, which is drawn up into a 10 c.c. syringe, with a moderately small needle (intravenous type). The dosage is primarily based on the weight of the patient—6 c.c. of the 10 per cent solution for each hundred pounds of weight of the patient, but the maximum dose should not exceed 10 c.c. of the solution. A patient weighing fifty pounds would get 3 c.c., and another weighing 150 would receive 9 c.c., but a 200-pound patient would receive but 10 c.c.

The arm is prepared for the intravenous administration of Evipal and the patient is told to count audibly very slowly, about 60 to the minute. As the patient starts to count, the solution is injected, and this is important—half of the dose is administered in the first 10 seconds, and the remainder within the next half minute. To get the prompt effect, rapid injection is essential because the Evipal is so rapidly broken down and eliminated by the liver, that anesthesia will be very light or unsatisfactory if two or three minutes are used to inject the drug into the circulation. If the patient counts as directed and the solution is rapidly introduced, in about 15 or 20 seconds the counting ceases, the patient yawns, the lower jaw drops, and in approximately a minute from the beginning of the injection the patient is fully anesthetized. Deep anesthesia lasts 10 to 15 minutes. The patient wakes quietly, but completely, in another 15 minutes, but may fall into a light sleep for an hour or two. The entire procedure is remarkably free from excitation, delirium, or mental confusion. Most of the patients state that the sensation was pleasant or that a mere blank existed for the period of unconsciousness.

We will consider the various items of interest concerning our series:

Age.—The youngest was 8, the oldest 74 years, but most were between 20 and 40 years.

Weight.—The lowest weight was 34 pounds, the highest 194½ pounds.

Amount of Anesthetic Used.—The least amount was 2½ c.c., and the greatest was 15 c.c. In the latter case we violated the rule that 10 c.c. was the maximum dose. We gave this carefully and slowly after first 10 c.c., and no alarming symptoms ensued. The patient was a robust young man weighing 179 pounds, requiring reamputation of the leg.

The rule covering the amount of anesthetic to be used, based on the weight, must be modified in certain cases. The feeble or anemic individual, regardless of the weight dose, requires less than the weight would indicate, and one must employ the same judgment as he would in the use of other drugs under similar circumstances.

Duration of Anesthesia.—Most patients were fully anesthetized in 1 minute, and the average duration of the anesthetic state was 12 6/10 minutes. The time required for complete reaction from the beginning of administration of the anesthetic was 25 1/10 minutes. The longest time required was 86 minutes, in a patient with bilateral pulmonary tuberculosis and carcinoma of the breast, and weighed but 86 pounds. This one case is striking evidence that the weight dosage cannot be absolute, but other conditions must be taken into consideration. One patient reacted fully in four minutes, but the anesthesia was sufficient for a very brief operation.

The Pulse.—The pulse rate usually becomes accel-

erated, and in our series averaged an increase of 18.7 per minute. Fourteen of the hundred cases showed a lower pulse rate. There was no outstanding change in the pulse volume in any case.

Blood Pressure.—As may be expected, there was a fall in blood pressure averaging 8.3 mm. Hg. Without exception the pressure returned to the pre-anesthetic reading as the patient became conscious.

Respiration.—The respiratory excursions invariably became slower and deeper, but stertor and cyanosis was never present.

Blood Chemistry.—In a number of the cases the blood chemistry was compared before and at variable periods after operation and they can be briefly summarized:

The CO_2 combining power in sixteen case, from 1 to 20 hours after the use of Evipal, showed an average of 8.9 volumes increase, compared with the pre-anesthetic specimen.

The blood sugar, in twenty-nine cases, showed an average rise of 23.8 mg., in specimens taken 1 to 24 hours post-operatively. Many of these patients had taken a full meal within 24 hours after the operation, and had been fasting for 6 to 12 hours before operation. This probably explains the rise in blood sugar.

The urea-nitrogen, in twenty-one cases, the average change was zero. Those that had a rise (and this was slight) were offset by a fall in others, giving the result as stated.

After estimating the non-protein nitrogen and finding an average rise of 2 mg. per 100 c.c. of blood, these examinations were discontinued because the change was not of sufficient importance to warrant this laboratory work. The white blood count could not be the basis for any sound deduction, as the count was more affected by the operation than any other single element entering into the calculation.

Classification of the Efficiency of the Anesthesia.—We designated the anesthesia on the basis of one plus for those that were not thoroughly relaxed, to four plus for a perfect anesthesia. On this basis we had 11 one plus, 14 two plus, 26 three plus and 49 four plus. We had most of our one and two plus anesthesias in the first forty cases and may be considered the result of our lack of experience, as the later cases were much smoother and better relaxed.

The conditions for which operations were performed will not be detailed, but were mainly of a minor character, such as abscesses, cellulitis, fractures and dislocations, hemorrhoids, et cetera. One Caesarian operation and five appendectomies were the principle major operations.

Thirty-seven of the patients had other conditions or diseases which required consideration from the anesthetist's point of view, but did not modify the operation to a great degree. We will enumerate a few—diabetes, lobar pneumonia, nephritis, hypertension, pulmonary tuberculosis, pyschosis and alcoholism. Notwithstanding this handicap, Evipal was safely and satisfactorily used with distinct advantage to the patient.

It should be stated that in selecting the hundred cases for operation, they were not chosen as good or bad risks, but solely on the ground that they were suitable cases for this particular anesthetic. We had in mind that the operation should require not over 15 or 20 minutes and complete relaxation was necessary. We have continued the use of Evipal in both hospital and office work and exercise the same discrimination in the choice of cases. We have occasionally extended the length of the anesthetic state by increasing the amount of Evipal and giving it in fractional doses, that is, after 15 minutes using an additional 3 c.c. to 5 c.c. of the 10 per cent solution.

SUMMARY

No anesthetic agent can gain wide usage unless its administration is attended with very little risk to the patient. The use of the drug by many anesthetists, with a wide variety of cases, will be the gauge by which it is measured.

Evipal appears to have many properties which recommend it for its general use, such as the simple and inexpensive equipment in its administration, the freedom from nausea and excitation, the prompt reaction, and safety.

One should bear in mind the limitations and particular indications of any anesthetic and to confine its field until experience allows the field to be widened, contracted, or entirely eliminated.

Evipal should be used in those cases in which a brief and full anesthesia is required, if Evipal is to be used alone. It is possible that it has a place as a preliminary anesthetic and it is possible that

its length of narcosis may be extended by fractional and larger doses. And one thing more—its administration should be entrusted to some one, preferably an anesthetist, whose sole responsibility will be the anesthesia.

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SURGICAL TREATMENT OF RETINAL DETACHMENT WITH ELECTRO-COAGULATION.*

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This condition has been known from its clinical and ophthalmoscopic manifestations for many years but up until the work of Gonin practically no advancement in its treatment had been made. Gonin came to the conclusion that the tear in the retina is the cause of the detachment and that by closing the tear the retina becomes reattached, thereby curing the detachment. Gonin uses the actual cautery to produce a sealing of the tear.

Other methods were evolved, Guist, of Vienna, making multiple trephine openings in the sclera, exposing the choroid which he then cauterized with potassium hydroxide, then perforating the choroid in one or more places to evacuate the subretinal fluid.

Lindner modified the method of Guist in reducing the number of trephine openings by starting from a single or from a few trephine areas, to undermine and lift up the choroid covering the rent from the sclera and then injecting diluted potassium hydroxide between the sclera and the choroid.

Larsson originated the use of ball electrode for its scleral effect in the treatment of detached retina. Larsson applies the small ball electrode to the sclera; after cauterizing a sufficient area of the sclera he trephines the sclera and perforates the choroid to let out the sub-retinal fluid.

Weve supported the work of Larsson but added in some cases the use of a fine straight diathermy needle with which he made multiple punctures into the sclera for a third of its depth; if necessary, he made a further puncture with a larger diathermy needle to let out the sub-retinal fluid.

Walker has recently published an excellent article dealing with the treatment of detachment by the use of his own diathermy instrument and electrodes.

I have not seen Walker's instrument used but his electrodes are particularly ingenious. The electrodes are made of iridium-hardened platinum and can be sterilized and cleaned by heating to redness in the Bunsen flame. The electrodes are not insulated so that a mild scleral or Larsson effect is obtained. All of the electrodes are so made that they may be threaded to prevent loss in the tissues.

SAFAR'S OPERATION

Safar evolved the best electrodes for the treatment of detached retina. There are several types—the brush-like electrodes consist of an insulated handle and of a plate also insulated in which a number of fine bright needles, usually six, are fastened, protruding to the length of 1.5 to 2 mm. The comb- or rake-like electrodes are miniature rakes without handles, having two to three projecting needle-like points 1.8 mm. in length. The nail- or spike-like electrodes without handles have a single needle-like electrode. When inserted into the sclera the needle or needles perforate easily with the current turned on, and remain fixed in the sclera after the current is turned off. The comb-like and the spike-like electrodes are used anteriorly while the brush is usually used posteriorly.

By the Safar method the self-retaining needle perforates the sclera and choroid only. The needles plug the openings so that the sub-retinal fluid cannot escape until the needles are removed. In the use of an ordinary needle electrode in making perforations of the sclera, its removal permits the sub-retinal fluid to escape and the retina to come in contact with the choroid, so that, when the needle is reinserted, there is danger of injuring the retina. When sufficient perforations have been made over the area of the detachment, the self-retaining needles are removed and the sub-retinal fluid will be seen

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to come through these small openings; if it does not, a larger needle can be inserted through the sclera to obtain drainage.

The use of the spike-, comb- or rake-like needles by the Safar method prevents the premature softening of the eyeball by preventing the loss of the sub-retinal fluid. The loss of the sub-retinal fluid during the operation makes it more difficult to keep a dry field. Large openings in the sclera, such as made by a trephine or cautery, tend to produce a hernia of the retina through the large opening in the sclera and choroid. This hernia, becoming fixed in the opening, may cause further detachment later.

Observation of Diathermy Treatment of Retinal Detachments in Some of the European Clinics

In Dr. Foster Moore's clinic in the Royal London Ophthalmic Hospital (Moorefield's), we observed a case of detachment operated upon by the diathermy method. About twenty appplications of the ball type electrode were made over the area of detachment. The sclera was then trephined over the area of the tear and a punctum dilator was used to perforate the choroid. Advise that the patient be kept in bed for three weeks.

In Oslo we attended the clinic of Prof. Hagan, who operated upon a case of detachment near the macula. There were three holes in the retina. After exposing the globe, he cut the external rectus muscle and got back to the insertion of the inferior oblique and then applied the ball type electrode. After each application the retina was observed with an ophthalmoscope. This was repeated in four places, after which the sclera was punctured with the actual cautery in the region of the holes.

In Stockholm we observed Larsson operate upon a detached retina. He, of course, uses his own method with ball electrode, and does a canthotomy to get a better exposure of the globe.

In Prof. Lauber's clinic in Warsaw we observed an operation for detachment, using the three-point comb- or rake-like applicator of Safar. He uses opaque goggles before and after the operation for detachment.

At the University Clinic, in Berlin, Kruchmann used a straight needle electrode in operating for detachment. His assistant observed the fundus after each perforation with the needle. He does not pay any particular attention to the location of the tear.

Meller, of Vienna, operated upon two cases of detachment, using the needle and the ball electrodes. He used the needle to make two lines of punctures, one line 21 mm. from the limbus, the other 16 mm. from the limbus, and then applied the ball electrode between the lines. The sub-retinal fluid escaped from the openings made by the needle electrode. Meller also uses the opaque goggles with the central perforation. He keeps the patient in bed for five weeks. In the second case he made two lines of punctures, one 15 mm., the other 21 mm. from the limbus, again using the ball electrode between the lines.

Lindner, of Vienna, operated upon a case of detachment in a high myope, who had previously had two unsuccessful operations for the detachment. Believing that the eyeball was too long to get reattachment of the retina, he removed a strip of sclera 4 by 20 mm. After thorough union has taken place, he intends to again operate for the detachment.

We observed Magitot, of Paris, operate upon a detached reina by the use of the actual cautery. He burned the sclera in four areas about the detachment, and then perforated through the center of these applications with the actual cautery, going through the sclera and choroid.

Important Landmarks

Remember that the ora serrata is 8 mm. posterior to the limbus, and no application should be made in this area between the ora serrata and the limbus. Avoid the venae vorticosae.

The macula is 28 mm. posterior to the limbus, and should be avoided. When there is a detachment at the macula, make the applications in the form of a horseshoe, with the open end of the horseshoe towards the optic nerve, being careful not to make any applications to the macula.

Operative Technique

Rest in bed for several days to two or three weeks is advised, having the patient wear (Lochbrille-Hole spectacles) opaque glasses with central transparent area about 4 mm. in diameter. In detachments involving the macula it is advisable to operate as early as possible.

Sodium amytal, gr. iii, is given the night before the operation and repeated again the next day two

hours before the operation. Codein sulphate is given hypodermically one-half hour before the operation.

The eye and surrounding tissues should be thoroughly cleansed. Akinesia is obtained by O'Brien's method.

Local anesthesia is obtained by repeated instillations of 4 per cent solution of cocain or 2 per cent solution of butyn and adrenalin, followed by a retrobulbar injection of 1 per cent novocain. External canthotomy is advantageous in most cases.

The conjunctiva and Tenon's capsule are now incised well back from the limbus, and the sclera is freely exposed and dried over the area of the detachment.

Often one, but at the most two, of the recti muscles must be resected, although it is possible in some cases to lift the muscle away from the globe by the use of ligatures.

The so-called nail- or spike-electrodes, as well as the rake- or comb-electrodes, have no handle and it is necessary for the operator to wear rubber gloves and grasp the electrode with a pair of forceps and apply the ball electrode to the forceps which carries the current to the electrode. Care must be used to prevent burning of the surrounding tissues, and it is advisable to have insulated retractors.

With the proper amount of current the electrode readily perforates the sclera; the current is then turned off and the forceps removed, leaving the electrode in the sclera, which prevents the premature escape of the sub-retinal fluid. A sufficient number of electrodes are inserted into the sclera to surround the rent, and then another series of electrodes are introduced to act as a barrage of blocking adhesions, care being taken to limit the applications to the region of the detachment.

If the detachment extends far back towards the posterior pole, the small electrodes are difficult to use, in which case the brush-like electrode containing six needles is very easily applied, the only disadvantage being the loss of sub-retinal fluid after removing the electrode. For this reason, use the brush electrode after inserting the required number of smaller self-retaining electrodes.

After completing the diathermy treatment, the small needles are all removed, which permits the sub-retinal fluid to escape; if the fluid does not appear, use a larger and somewhat longer needle electrode, going through the sclera and choroid, which will then give free drainage of the sub-retinal fluid.

Tenon's capsule, conjunctiva, muscles and the external canthotomy wound are sutured. Atropine is instilled into the operated eye and an occluding dressing for both eyes is used to put the eye at complete rest.

Patient's position in bed is such that the area of former detachment lies as low as possible. In detachments located above, elevate the foot of the bed; if below, put patient in a half-sitting position in bed; if on the left or right, have the patient lie on the side that will cause the area of the detachment to be as dependent as possible.

The first change of dressing is made on the fourth or fifth day, and then only to make external inspection and careful cleansing of the eyelids (prohibit all movement of eye during the dressing). Instill atropine and again apply occluding dressing to both eyes. Renew dressings every five days. Remove dressing at end of third week and give hole-spectacles which are to be worn for three to four weeks.

Do not remove sutures early; wait ten to fourteen days, and have the eye well anesthetized on account of the danger of a sudden movement of the eye.

Complete healing of the fundus with firm union of choroid to retina takes place in six to eight weeks.

CASE REPORTS

Case 1.—Mrs. O. W. E., white, age 56, occupation housewife, referred by Dr. Mitchell, of Lexington, Va. Seen first on August 7, 1933, complaining that on June 26, 1933, she felt a little prick in the right eye, and since then seems as though there is a mist over the right eye. Has had poor vision in the left eye all her life. Examination revealed the following:

Vision: Right eye—patient could see light, but could not count fingers at one foot; left eye shows good light projection.

Ophthalmoscopic Examination: Right eye—vitreous filled with thick opacities and with the ordinary ophthalmoscope could not make out any fundus details, but with the giant Gullstrand ophthalmoscope could make out a detachment below. Left eye showed stretching of choroid and many atrophic areas.

Patient has about fifteen diopters of myopia in each eye. Pupils react to light, accommodation and

consensually. Fields of vision—in the right eye it was impossible to obtain any field even with a large object; the left eye was normal for form and color.

Corneal microscope shows in the right eye increased flare in the anterior chamber and some old blood vessels in the periphery of the cornea.

Rest in bed was prescribed and opaque lenses with 4 mm. opening in the center and shields to the side should be worn constantly. Patient kept at home until August 17th and then entered hospital. Patient was put to bed and continued to wear the hole spectacles. Right eye showed considerable clearing of the vitreous; disc and blood vessels could be made out and a large detachment, which extended from the lower border of the external rectus to the nasal border of the inferior rectus, was readily made out. Could not locate any tears.

Operation August 18, 1933, under local anesthetic. Canthotomy done externally. Conjunctiva was incised about 10 mm. from limbus and the eyeball well exposed; inferior rectus was severed and eye rotated upward; sclera was then thoroughly dried. With the Sanitax ophthalmotherm eight single Safar needles were inserted into the sclera anteriorly, while the Safar brush with six needles was applied in two areas posteriorly. In removing the brush electrode, sub-retinal fluid came through the openings; also when the Safar self-retaining single needles were removed, sub-retinal fluid oozed through the openings. The inferior rectus, conjunctiva and the canthotomy incision were sutured. Atropine instilled in operated eye and both eyes were bandaged for three weeks, patient remaining in the hospital for one month.

September 27, 1933, right eye showed many vitreous opacities; could make out the disc with a -18.00 sphere; no signs of detachment. After removal of the bandage patient continued to wear the glasses with a small central opening.

November 25, 1933, vitreous opacities much thinner; retina reattached. Fundus shows atrophic areas where the diathermy electrodes were applied. Fields of vision for form and color normal. Vision—right eye—with a -15.00 sphere = 3/200.

January 27, 1934, vision in right eye with a -15.00 sphere = 7/200. Tension normal. Vitreous opacities much thinner and no signs of detachment anywhere in the fundus.

Case 2.—Miss M. L. L., white, age 65, first seen March 28, 1933, at which time she showed hypermature complicated cataract of the right eye. Left eye showed senile lens changes, particularly nasally, large vitreous opacities, and stretching of the nervehead with several areas of choroidal atrophy.

Vision—right eye—shows poor light projection, being accurate from the right side only. Vision of left eye with -16.00 sphere = 11/120, although patient reads No. 62 M-type with a -6.00 sphere.

Pupillary reactions—right eye—no reaction; left eye normal. Tension normal in each eye. Contact lens placed over the left eye and a -18.00 sphere added gives patient vision of 6/60.

Cataract progressed rather rapidly, and on October 10, 1933, combined extraction was made under local anesthetic. January 9, 1934, Ziegler V-shaped capsulotomy was made under local anesthetic. March 1, 1934, vision—left eye—without glasses = 6/45, and with the reading glass read No. 62 M-type best at 10 cm. March 3, 1934, patient came in complaining that on March 2nd she noticed something coming over the left eye. Examination showed detachment of the retina below and temporally.

Prescribed perforated opaque lenses to be worn and patient to remain in bed.

March 16, 1934, detachment had increased, and in looking into the fundus a large balloon-like detachment was seen temporally extending from one o'clock to six o'clock. Anterior portion of the detachment best seen with a +13 sphere. Few vitreous opacities seen but no tear could be made out. With the patient looking straight forward the detachment covered three-fourths of the disc, only a small portion of the nasal part of the disc being seen.

Operation for detachment under local anesthetic March 17, 1934. Local anesthetic was used. Akinesia by O'Brien's method was followed by retrobulbar injection of novocain. External canthotomy was done.

Conjunctiva and Tenon's capsule were incised about 10 mm. from limbus, and sclera and external rectus exposed. Suture passed through external rectus and tendon severed 2 mm. from attachment. Suture passed through stump of external rectus attachment to rotate the globe nasally.

Sclera was dried and four nail- or spike-like electrodes inserted, back of which two comb- or rake-

like electrodes with three needles were inserted; then a six-point brush-like electrode was inserted, first above and then below region of macula. Applied the ball-like electrode to the sclera (Larsson's method) in four areas not touched by the needle electrodes.

Sub-retinal fluid escaped from all the openings, the globe becoming flattened and quite soft. External rectus sutured to its original attachment. Tenon's capsule and conjunctiva were sutured and the external canthotomy wound was sutured.

Eye was cleansed, atropin instilled, and binocular occlusion dressing applied.

Patient returned to bed and ordered to lie on left side to obtain the benefit of gravity in getting the retina in contact with the choroid.

Patient was discharged from the hospital April 6, 1934, and kept in bed at home, using the perforated opaque lenses. Patient permitted to get out of bed April 26, 1934, but still wore perforated spectacles.

Examination April 28th showed retina firmly reattached and a moderate number of vitreous opacities. Vision was 10/200 for distance and patient read No. 1.00 M-type. Field of vision fairly full for form and color to the left, but still has loss of visual field to the right.

CONCLUSIONS

Electro-coagulation following the technique of Safar is probably the safest and most dependable method for the treatment of retinal detachments.

The Safar electrodes prevent damage to the retina and the vitreous. Hemorrhages rarely, if ever, occur.

The operation can be successfully performed even if no tear can be made out.

The Safar method can be combined with any of the other methods mentioned, but preferably with the ball electrode procedure of Larsson.

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RECURRENT RHEUMATIC FEVER WITH PERICARDITIS TERMINATING IN SEPTICEMIA.

Report of a Case with Necropsy and Experimental Bacteriological Studies.*

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The etiology of rheumatic fever has not been settled, but it is becoming increasingly evident that it is a bacterial and probably a streptococcal infection. The tendency toward the development of inflammatory lesions of endothelial and subendothelial tissues, the rarity with which parenchymatous tissues are primarily involved, the not infrequent relationship to preceding infections of the upper respiratory tract, the frequent occurrence of carditis and the chronicity with acute exacerbations point to its being a systemic infection. In view of the unsettled state of knowledge regarding etiology and in spite of many common characteristics, cases are seen which resemble rheumatic fever but which it is impossible to positively diagnose as such. The outstanding clinical features are the migratory febrile arthritis without residual joint disability and the frequent occurrence of acute and chronic pericarditis, acute myocarditis and chronic endocarditis. Pathologically, the only distinctive lesion is the Aschoff body, which in chronic cases is usually not found. The case here reported had many of the clinical features of rheumatic fever with migratory

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arthritis and acute pericarditis. It terminated in a frank streptococcal septicemia, but a thorough necropsy did not reveal a focus of infection. The question arises as to the relationship of the terminal septicemia to the apparent rheumatic infection. It is possible that both phases of the case were due to the same cause, but this is not susceptible of proof.

Although it is impractical, if not impossible, to completely search the literature for records of cases similar to the one we are reporting, an extensive search has been made of the literature on the subject of rheumatic fever appearing in the past few years, and no exactly similar case has been discovered. We consider this case to be sufficiently interesting to warrant publication.

REPORT OF CASE

Clinical Record.—The patient, a colored woman, was first admitted to the Georgetown University Hospital on September 16, 1931, at which time she was twenty-four years old. For three weeks she had had painful swellings of some of her joints, definitely migratory and closely resembling rheumatic fever. First the right hip, then the left ankle and finally the right ankle had been involved. There had been pain also in the right flank and the lower abdomen at the onset. Fever and headache had occurred during the illness. She stated that she had had a similar affection of the right wrist six months previously and that "sore throat" had been present twice a year for the preceding two years. Leukorrhea had been present for ten years, associated with menstruation, but there was no suggestion of a gonorrheal infection. On admission the right ankle only was involved. It was moderately swollen, hot and tender. The tonsils were definitely chronically infected. The breasts were distended with milk, since she was still nursing her third baby, which was one year old. Otherwise the physical examination was negative. The temperature was 101.6° F., the pulse rate 100 and the respiratory 32 per minute. The urinalysis was normal except for a few leukocytes. The hemoglobin was 74 per cent (Dare method), the erythrocytes numbered 3,650,000 and the leukocytes 6,200 per cu. mm. of blood, with 80 per cent polymorphonuclear neutrophiles. The blood Wassermann and Kahn tests were negative. Within two weeks the temperature returned to normal and the ankle ceased to be affected. Tonsillectomy was performed during the fourth week, and the patient left the hospital apparently entirely well.

She returned to the hospital eight months after her first admission, May 28, 1932. Three weeks before she had had "indigestion" with vomiting and malaise. A few days before admission she had begun to have severe pain along the left border of the sternum, aggravated by deep breathing and associated with a paroxysmal, unproductive cough. She was unable to sleep lying on her back, but could do so lying on her side. On admission the temperature was 103.6° F., the pulse rate was 130 and the respiratory rate was 22 per minute. The area of cardiac dulness was greatly increased both to the left and to the right, there was a pleuropericardial friction rub under the lower half of the sternum and in the third and fourth intercostal spaces to the left of the sternum, and a faint apical systolic murmur was heard. Otherwise the physical examination was essentially negative. The urine contained albumen, graded 3, and some hyaline casts and leukocytes. The hemoglobin was 44 per cent (Dare method), the erythrocytes numbered 2,770,000 and the leukocytes 3,500 per cu. mm. of blood, with 63 per cent polymorphonuclear neutrophiles. Fluoroscopic examination of the chest showed a greatly enlarged cardiac shadow with very slight pulsation, indicative of massive pericardial effusion. A roentgenogram showed the transverse diameter of the cardiac shadow to be 21 cm. and the transverse diameter of the thorax to be 26 cm. During the first two weeks of hospitalization the temperature remained continuously elevated, ranging from 101° F. to 103° F., with a slight tendency to decline. The pulse rate ranged between 100 and 130 per minute. In the beginning of the third week the temperature rapidly declined and remained normal during most of that week and during the fourth week, at the end of which she was discharged. By the end of the second week the friction rub had disappeared. The area of cardiac dulness rapidly decreased after this time, and in the middle of the third week a roentgenogram showed the transverse diameter of the heart to be 14.2 cm. The pulse rate remained about 80 per minute during the fourth week. Two blood transfusions were given. At the end of the third week the hemoglobin was 54 per cent, the erythrocytes numbered 3,760,000 and the

leukocytes 6,000 per cu. mm. of blood, with 75 per cent polymorphonuclear neutrophiles. The patient left the hospital apparently completely recovered. There was still a very faint apical systolic murmur.

She was last admitted to the hospital on September 2, 1932. She had been seen in the cardiac clinic in July, at which time she was weak, had a persistently rapid pulse, with a temperature of 99.4° F., and was dyspneic on exertion; the cardiac examination was negative. During the few days preceding admission she had been feeling badly, was more dyspneic and had palpitation. The left knee, left elbow and right wrist had become swollen, hot and painful. The temperature on admission was 101.5° F., the pulse rate 130, and the respiratory rate 32 per minute. Except for the joints alluded to and some enlargement of the area of cardiac dulness the physical examination was essentially negative. The urine contained albumen, graded 3, and hyaline casts, graded 3. The hemoglobin was 40 per cent (Dare method), the erythrocytes numbered 3,010,000 per 100 cu. mm. of blood, and the leukocytes numbered 4,350, with 63 per cent polymorphonuclear neutrophiles. With rest and the use of sodium salicylate the joint manifestations disappeared in one week. The temperature had reached normal by the sixth day, the highest having been 103° F. The pulse rate did not drop correspondingly but remained about 110 per minute. She continued to feel weak. During the second, third and fourth weeks the temperature tended to remain near the normal level with occasional elevations to from 100° F. to 102° F. The average pulse rate was about 100 per minute. She complained for a few days of pain in the right chest anteriorly and later of pain in the left ear, both of which completely subsided after a time. A fluoroscopic examination of the chest showed some increase in the heart shadow to the right and a little increase to the left. During the fifth and sixth weeks the temperature was elevated daily, being about 99° F. in the morning and from 101° F. to 102° F. in the afternoon. The pulse rate varied from 100 to 120 per minute. The respiratory rate was never greatly increased. About the middle of the sixth week she began to complain of pain in the left shoulder and both elbows, which disappeared after a week under salicylate administration. The albuminuria persisted, and pus and bacteria appeared in the urine.

The first five days of the seventh week passed with the temperature never rising above 100° F. On the morning of the sixth day of that week the temperature rose to 103.5° F., and that evening it was 104.6° F., with the pulse rate 140 and the respiratory rate 22 per minute. The blood pressure, previously about 100 systolic and 78 diastolic, was 90 systolic and 58 diastolic. The posterior cervical and axillary lymph nodes were slightly enlarged and tender. The spleen was just palpable. The lungs were clear and the heart unchanged. A few splintered petechiae were appearing on the hands, mainly about the hypothenar eminences. The following day these petechiae were more numerous and larger, and the gums were bleeding. The spleen was quite tender. The patient complained of some pain substernally. The temperature was 98.° F. in the morning and rose to 103.8° F. in the afternoon, the pulse rate remaining very rapid. Next day the temperature did not rise in the afternoon over 101° F.; there was a nose-bleed, and extreme tenderness in both splenic and liver regions was elicited. After this the temperature was septic for four days, rising as high as 105.2° F., at the end of which time the patient died. On one of these day she had two chills, and the left wrist became swollen and painful; the petechiae on the hands increased and appeared also in the mouth. The hemoglobin was 53 per cent (Newcomer method), the erythrocytes numbered 2,810,000 and the leukocytes 11,550 per cu. mm. of blood, with 96 per cent polymorphonuclear neutrophiles. The blood non-protein nitrogen was 45 mgm. per 100 c.c. of blood. A blood culture taken at the end of the second week in the hospital revealed growths of diphtheroids after three weeks, but little significance was attached to this result. At the beginning of the last week blood culture revealed a flourishing growth of green-producing hemolytic (alpha prime) streptococci in two days, and cultures repeated the following day and on the day of death showed the same organism. During the final phase of her illness salicylates had no effect upon the arthritic or other manifestations.

Necropsy.—Only essential features will be given. The heart measured 14 cm. in its tranverse diameter; it extended 6 cm. to the right of the midline. Delicate fibrous adhesions were present between the retrosternal tissues and the epicardium and between the pleurae and the epicardium. The epicardium

and the pericardium were adherent throughout most of their extent by similar adhesions, between which there was a small amount of gelatinous fluid. Several petechiae were present on the posterior surface of the epicardium, and the epicardial fat was very edematous. The myocardium was friable and yellowish brown. The endocardium, valves, great vessels and coronary arteries appeared quite normal. The heart weighed 350 grams (normal 275 grams). The lungs appeared normal except for congestion in the bases. The pleurae were normal except for the adhesions to the epicardium, and there was no fluid in the pleural cavities. The liver weighed 1,200 grams (normal 1,200 grams) and showed evidence of congestion. The spleen weighed 275 grams (normal 150 grams) and was soft. There were adhesions between the spleen and the diaphragm. On section of the spleen the Malpighian corpuscles were seen to be prominent, and the pulp was mushy. Covering the intestines and settling in the most dependent parts of the peritoneal cavity and pelvis was a small amount of yellowish white, liquid pus, estimated to be between 200 and 300 c.c. The stomach and intestines appeared entirely normal; there was no congestion nor roughness of their serous covering. Fibrin was not in evidence. The pelvic organs were very carefully examined and appeared to be entirely free of evidence of recent inflammation. There were a few old adhesions between the ovaries and the fimbriae of the tubes, and the ovaries contained a few small hemorrhagic cysts. The other abdominal viscera were apparently normal.

Microscopic examination revealed the following: The epicardium was thickened, edematous and invaded by moderately vascular, fibrosing granulation tissue with elongated foci of polymorphonuclear leukocytic and lymphocytic infiltration. There was some infiltration also extending from the epicardium a short distance into the subjacent myocardium, but, except for some acute toxic degenerative changes and a little interstitial edema, the myocardium was otherwise normal. Aschoff bodies or other inflammatory changes were entirely lacking. The lungs were essentially negative except for some congestion. The liver showed acute congestion. There was acute splenitis with small infarcts. The kidneys were essentially normal.

Cultures of the heart blood and of the pericardial fluid showed alpha prime streptococci similar to those obtained in cultures of the blood made during the patient's life.

Experimental Bacteriological Studies.—The results of these studies, conducted at the National Institute of Health, Washington, D. C., were reported in greater detail by Hedley and Rose in *Public Health Reports*, Vol. 48, No. 34, August 25, 1933, page 1038. Three monkeys were injected intravenously with fresh cultures of alpha prime streptococci from the patient. Two developed arthritis and one died of toxemia. No evidence of heart disease was found. One monkey intravenously injected with an extract of cardiac tissue developed an acute bacterial endocarditis. Thirteen rabbits were similarly injected with streptococci from the original or subsequent experimental cases. Four developed muco-purulent arthritis and two developed myocarditis. Twenty-six rabbits were injected with extracts of heart muscle from the patient or from rabbits with endocarditis. Fifteen developed acute bacterial ulcero-vegetative endocarditis of the right side of the heart. The heart of one of these rabbits is shown in Figure 1. Three developed muco-purulent arthritis. None of the lesions produced in this work, however, are considered to be evidence that the organism isolated from the patient was the organism responsible for her polyarthritis or pericarditis. Such lesions are seen as a result of almost any severe streptococcal bacteremia in monkeys and rabbits.

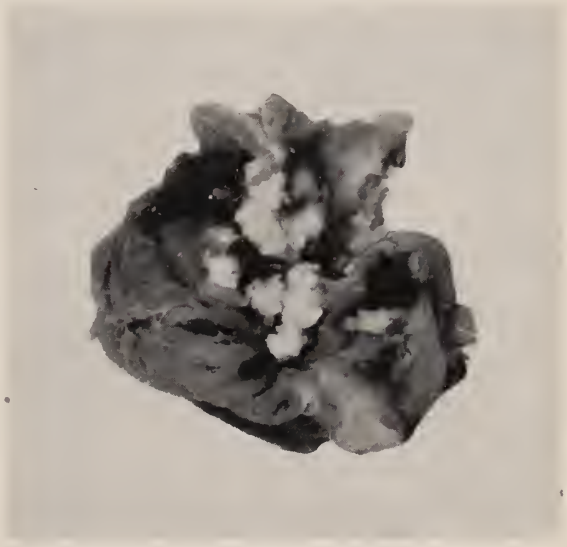


Fig. 1.—Heart of rabbit showing massive vegetations in right auricle and ventricle.

DISCUSSION

The foregoing case reminds one of a statement about rheumatic fever from an unknown source: "We do not know when it starts, we often cannot recognize it when it is here, we have no cure for it, and we cannot tell when it is gone." The disease apparently commenced as a simple case of migrating polyarthritis. Later, pericarditis developed. Apparently the progress of this condition was arrested. The patient became fever-free and the acute phase subsided, leaving as a residue some intrapericardial and mediastino-pericardial adhesions. During the interim between this attack and the last admission the patient was somewhat dyspneic and had a slight elevation of temperature, conditions frequently seen in the course of active rheumatic carditis. At the beginning of the last admission the picture appeared to be that of a recrudescence of the rheumatic state. The response to salicylates was confirmatory of this impression. Later, the picture changed from that of rheumatism to that of a severe septicemia. The lack of response to salicylates, the petechiae, the high leukocyte count, the febrile course, and the persistently positive blood cultures are sufficient proof of this.

Just when the rheumatic element merged into or was superseded by the bacteremic cannot be said. Whether the alpha prime streptococcus obtained in the last phase of the disease was the primary etiologic factor cannot be determined, the agent responsible for rheumatism not being known. The experimental work, while of academic interest due to the constancy with which lesions of the tricuspid valve were produced, actually shed no light as to the possibility of the isolated organisms being the etiologic factor in the production of the rheumatic state. These inconclusive results are in accordance with those of other workers and by no means entirely discredit such a possibility.

The relationship to rheumatic fever of streptococci in the general circulation or infected tissues is still a moot question. Many of the earlier workers occasionally obtained streptococci on blood culture or on culture of joint fluids. These were hailed as possible etiologic agents. In no instances have these claims been substantiated.

More recently, with improvement in technic, various workers have been more successful in obtaining growths of streptococci from the blood streams of active cases of rheumatic fever patients. Cecil and his co-workers[1] obtained positive blood cultures in thirty-five of sixty cases (58.3 per cent). Of these, thirty-three were alpha, one beta, and one gamma types of streptococci. These organisms fell into distinct immunological groups, but none was advanced as the etiological factor. Clawson[2] obtained positive cultures, mostly viridans, in fifty of 100 cases. He does not regard the organisms as biologically related; he believes that while there is a direct invasion of the tissues there is also an allergic factor, as a result of which tissues over-react. Gray, Fendrick and Cowen[3] in a series of twenty-eight rheumatic fever patients obtained positive blood cultures in twenty cases (71 per cent). The organisms were of the alpha type in sixteen instances. Small[4, 5] and Kreidler[6] isolated a gamma type of organisms, which was called the streptococcus cardio-arthritidis, from the blood of three of 116 rheumatic fever patients and from the throats not infrequently. The organism was described as having constant cultural and biological characteristics and was described as the etiological factor. Subsequent work has failed to confirm this belief. The organism described by these workers appears to be a common inhabitant of the normal flora of the alimentary tract.[7]

Other workers, including Kinsella and Swift,[8] Nye and Seegal,[9] Irvine-Jones,[10] Jordan,[11] and Lynch[12] have been unable to obtain high percentages of positive blood cultures in rheumatic fever. Furthermore, it cannot be shown that the organisms obtained by the more successful workers are not adventitious invaders, or, in some instances, terminal invaders. Practically every organism advanced as an etiological factor has its counterpart in the normal flora of the gastrointestinal or respiratory tract. Grant and Lewis[13] believe that streptococci not infrequently invade the blood stream of healthy as well as diseased individuals.

Attention is directed to the infrequent occurrence of rheumatic pericarditis without myocarditis or endocarditis (Sprague, Burch and White[14]). The cause of the purulent peritoneal exudate in this case is indeterminate. There was no evidence of peritonitis. The picture was not that of rheumatic peritonitis in which definite peritoneal inflammation, frequently with Aschoff-like bodies in the

peritoneum, is usually present (Rhea,[15] Wood and Eliason[16]).

SUMMARY

An unusual case is reported of a young colored woman who for a year and a half had recurrent attacks of rheumatic fever alleviated by salicylate therapy and in one of which she had pericarditis with effusion. During one of these attacks of polyarthritis she suddenly developed manifestations of septicemia which did not respond to the administration of salicylates. Blood cultures showed flourishing growths of alpha prime streptococci. At necropsy, besides the visceral manifestations of septicemia, there was evidence of healed pericarditis and a purulent peritoneal effusion of unexplained origin. Myocarditis and endocarditis were not present. Experimental bacteriological studies with monkeys and rabbits showed the organism isolated from this patient's blood to be extremely virulent and to produce in many of the animals arthritis and ulcerovegetative endocarditis. The question naturally arises but cannot be settled as to the relationship between the etiological factor of the recurrent attacks of rheumatic fever and the streptococcus isolated in the terminal septicemia.

The authors desire to express their appreciation to Miss Edith Rose for her assistance in the bacteriological studies, and to Assistant Surgeon J. G. Pasternack for interpreting the microscopic pathologic findings.

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APPENDICITIS VS. ITS COMPLICATIONS.*

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In 1827 Dr. F. Mêlier described appendicitis, and named among its symptoms fixed pain in the right iliac fossae and colic. This brilliant and original young Frenchman was years ahead of his contemporaries. He reported cases of undoubted appendicitis, verified by autopsy; described gangrene, perforation, associated peritonitis, and appendiceal concretions. He said, "If it were possible to establish with certainty the diagnosis of this affection, we

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could see the possibility of curing the patient by operation. We shall perhaps some day arrive at this result."

In spite of his discoveries and demonstrations, the profession for the next fifty years followed the teaching of DuPuytren, that abscesses in the iliac fossae originate from the cecum and not from the appendix. In 1886, Dr. Reginald Fitz, of Boston, persuaded the medical world that these abscesses came from the appendix, and originated the term—appendicitis. Consequently, for the past forty-seven years the profession has been dealing with this disease and its complications with a full knowledge of their nature and origin, and it will be the purpose of this paper to indicate the measure of success and failure attending these efforts.

The United States of America and Canada possess the unenviable distinction of having the highest mortality rate from appendicitis of any other civilized countries. The Metropolitan Life Insurance Company, after an analysis of 34,408 deaths from appendicitis among its policy-holders, found that appendicitis ranked second only to cancer among surgical diseases. From all parts of the country a warning is being broadcast that the death rate from appendicitis is steadily increasing. Regardless of the cause or causes of this increase, if there be an increase, it certainly cannot be attributed to any lack of interest or neglect of this subject, from an academic standpoint at least, by the medical profession; for, between the years of 1916 and 1930, inclusive, 2,103 papers on this subject appeared in the world literature, 1,050 of them dealing with acute appendicitis. The testimony of all papers on this subject and of all individual surgical experience is to the effect, that the complications of appendicitis, and not appendicitis itself, are the cause of almost all of this mortality.

Dr. Frank Boland, in a survey of 4,270 cases of appendiceal diseases treated in eight hospitals in Atlanta by 197 surgeons, with a mortality rate of 4.4 per cent, observes that an analysis of these deaths shows that only .4 of 1 per cent died of appendicitis, and that 4 per cent died of the associated complications.

Dr. John O. Bower, of Philadelphia, made a somewhat similar survey in that city, reporting 6,123 cases treated in twenty-seven hospitals by 364 surgeons, with a mortality rate of 7.3 per cent, with practically the same findings.

These surveys have shown little that was not well known before, but serve the useful purpose of being concrete examples, in a large way, of results accomplished by groups of surgeons in our medical centers, and of emphasizing the fact that a mass of people are dying needless deaths. For instance, these surveys show conclusively that if all cases of appendicitis were operated on early, that is, within six or twelve hours after the onset, there would be practically no mortality from this disease. However, it is not safe always to wait even twelve hours, for not a few cases were encountered where widespread peritonitis had developed within this limit, and some within as short a time as six hours after the onset of pain. These fulminating cases had almost invariably been purged. Yet it is easy to visualize the same results being achieved by a virulent infection without the aid of purgation.

Specifically, Dr. Bowers' survey showed that patients operated on within twelve hours are 99 per cent safe; if operated on within twenty-four hours, one in thirty-nine dies; if operated on within forty-eight hours, one in seventeen dies; if within seventy-two hours, one in thirteen dies, and if over seventy-two hours have elapsed, one in nine dies. It also showed that in 44.7 per cent of all cases admitted, some form of peritonitis had developed. The irony of this last fact is that it took place in Philadelphia, the site of the first Medical School in America, and in a city that prides itself on being the medical center of the United States.

The writer has drawn freely from these surveys because they illustrate most forcibly the vital importance of the time element. After all is said and done, a timely operation is the only safety valve in the control of this disease. Delay too often means complications, and complications inevitably mean a large number of unnecessary deaths.

Seemingly it has long been the ideal of many physicians, engendered perhaps by loose teaching and writing on this subject, to get their patients operated on before a rupture takes place. That this is a very inadequate standard, these surveys and the individual experience of every surgeon can testify. There is only one ideal time to operate, and that is before the appendix becomes extensively inflamed. There is only one proper time to recom-

mend and insist on an operation for appendicitis, and that is as soon as a diagnosis can be made, or can reasonably be suspected. Appendicitis is far too treacherous a disease to waste time on an accurate diagnosis. The same is true of some other acute abdominal conditions. Mistakes in diagnosis are going to continue to be made, regardless of the time spent in making them, and it is far better for the patient to make them on the safer side of the ledger, and have a harmless laparotomy relieve some hitherto unsuspected condition, than to wait for more assurance and usher in a full-blown case of peritonitis through pride of accurate diagnosis.

There is another reason for an early operation. The medical profession has long since realized the folly of operating on acute salpingitis. The infection here, even if the salpingitis be puerperal, is probably no more virulent than that in many an inflamed appendix. In salpingitis we wait until the inflammation subsides, or else merely drain a collection of pus. Experience has taught that clamping, ligating and cutting through inflamed tissue is productive of septicemias. But what do we find in a delayed case of appendicitis even though it be unruptured? Here we have a suppurating or gangrenous tissue, probably the site of a thrombophlebitis, certainly loaded with pus and bacteria, which on account of its menace we are bound to remove. We accept the hazard that we refuse in acute salpingitis, and operate in order to escape the greater hazard of an impending peritonitis. No small number of these cases run a septic temperature and die of a blood stream infection, or of a localized infection elsewhere. Da Costa states that the mortality rate from gangrenous appendicitis is greater than that from abscess formation. This has not been the writer's experience, but that experience has been small.

In these suppurating and gangrenous cases, the writer has for a long time practiced placing the ligature or ligatures, as may be needed, as near the base of the mesentery as possible, and as far removed from any inflamed tissue as possible, in order to avoid the danger of septicemia through traumatizing septic and necrotic tissues. At times this can be neatly accomplished. In other cases one has to be content to remove the appendix in any possible way. Probably by avoiding the traumatizing of inflamed tissue, an occasional disaster may be averted.

With a world-wide mortality rate of practically nothing for early acute appendicitis, and a rate of from 5 to 12 per cent for abscess cases, and a rate of from 20 to 30 per cent for diffuse perintonitis, and equally as high or higher rates for other forms of complications, it is certainly incumbent upon the medical profession to use every effort in its power, individually and collectively, to impress upon the public the dangers of delay in this disease.

Nothing has been said in this paper so far about the dangers of purgation in acute appendicitis. As a rule, 90 per cent of all appendiceal cases that die have been purged, but, in addition, the really fatal factor—delay—had been superimposed. Purgatives are bad, yes vicious, as used in acute appendicitis, or in any other acute abdominal pain of unknown origin, but they are as mild as morphine in this disease when contrasted with the deadliness of delay. It is the delay that kills. It is entirely possible that no harm whatever would result from any purgative given early in an attack of appendicitis, unless given as a substitute or preventive of an immediate operation. Of course, to avoid an operation is often the reason for giving or taking a purgative, and, when this is done, it constitutes about the most vicious abuse to which a case of appendicitis can be subjected. Under no circumstances should any doctor administer a purgative for any acute abdominal pain unless he knows specifically the cause for which it is given. The public should be warned by every available means of the danger of taking purgatives for abdominal pain, and of the danger of not seeking medical advice for any acute abdominal pain that lasts for more than a few hours.

It seems to the writer that since appendicitis ranks second only to cancer in the United States as a cause of surgical death, that here is a fertile field for public propaganda. This kind of propaganda is being put on with a vengeance by the profession in an effort to prevent cancer deaths. Why not extend the same publicity to the public regarding their second great danger, appendicitis, and warn them of the dangers of delay and purgation in cases of acute abdominal pain? The public will have to be educated along these lines before any great reduction of mortality takes place. Dr. Boland found in

the Atlanta survey that the mortality rate was four times as high among the negroes as among the whites, the reason being that it took the negroes twice as long to get to the hospitals as it did the whites, and almost invariably they came well purged with salts and castor oil. The record showed further that every negro who died had taken pre-operative purgatives.

Could there be any stronger indictment of the dangers of delay and purgation, or any greater call to the medical profession for adequate measures of warning to the more ignorant classes of our people? Such a campaign was put on in Philadelphia County —with excellent results. As a rough outline, this was done by distributing to 3,813 doctors 300,000 stickers, warning the public of the dangers of delay in calling a physician, and of taking purgatives for acute abdominal pain, by placing 2,000 placards with a similar warning in all drug stores, and having special lectures given pharmacy students as to the danger of giving purgatives in cases of acute abdominal pain. A careful check-up in one hospital after this campaign had been on for some time showed a 42.3 per cent reduction of mortality. Unquestionably a great deal could be accomplished in any community by a similar campaign.

The question of early diagnosis of appendicitis is highly important. It is not sufficient merely to diagnose appendicitis. It should be diagnosed early, before the inflammation has time to spread, and while an operation can be done with but few chances of failure. The cardinal symptoms and signs of appendicitis, as given in nearly all textbooks, are those of appendicitis and peritonitis combined, and, as such, are grossly exaggerated. There is only one symptom of early appendicitis always present, and that is *pain*. There is only one sign generally present, and that is *tenderness,* but this is absent in 11 per cent of the cases. There is only one corroborative finding, and that is leucocytosis. This is absent in 20 per cent of all cases.

The diagnosis of early appendicitis, as against other acute abdominal conditions, thus simmers down to acute colicky pains, originating in or around the epigastrium, and after a few hours localizing with tenderness in the right side of the abdomen, with leucocytosis as a rule, but a very unreliable rule. All of the other symptoms and signs of early appendicitis are so variable that they are useless in a specific diagnosis.

If doctors would remember that the pain of appendicitis always begins in or near the epigastrium, and then a few hours later settles in the right side of the abdomen, many an error of diagnosis would be avoided.

In assessing the blame for the high mortality rate in appendicitis, the surgical section is quick to deplore the indiscriminate use of purgatives by the public, and the attempts to "freeze it out" on the part of the general practitioner, but rarely does it blame itself for any part of this mortality. That much of this mortality, particularly that in peritonitis, is due to unskilful work on the part of the surgeon, is undeniable by anyone who will look at the record. Dr. Bowers' survey showed that individual surgical mortality varied from 0 per cent to 20 per cent. Some sections of the country show a much wider variation. There is no explanation of this on any reasonable basis, other than that some surgeons learn how to handle peritonitis skilfully, or at least creditably, while others learn nothing at all. The Fowler-Murphy-Ochsner treatment, originated a generation ago, revolutionized the mortality rate from peritonitis throughout the civilized world. With minor deletions and useful amplifications, its sound principles are still the backbone of surgical treatment. In spite of this or any other good example, there are some surgeons who seem to recognize no method of treatment except their own. They are innocent of, or else disregard, the accumulated experience of the medical world on this subject, and with no equipment to pioneer in this field, chase off after the bizarre, the radical, and the spectacular, apparently thinking that Solomon merely abdicated in their favor. They are always the undertakers' best friend.

If there is any patient on earth who needs conservative treatment it is the patient desperately ill with peritonitis. Ochsner pointed this out years ago, and most of the profession recognize the soundness of his conservatism.

If the writer has achieved any success in the treatment of appendicitis and its associated pathology, it has been by pursuing conservative methods, not blindly, but with a determination to stick to a good method until a better one is demonstrated. As stated above, the writer's record in this field is

small. It consists of 290 cases of acute appendicitis, appendiceal abscesses and diffuse peritonitis, with sixty-seven cases of chronic appendicitis, a total of 357, divided as follows:

Acute appendicitis	cases 211	deaths 0
Appendiceal abscess	cases 38	deaths 2
Diffuse peritonitis	cases 41	deaths 6
Chronic appendicitis	cases 67	deaths 1

This gives a mortality rate for the acute cases of 2.75 per cent, and for the entire group a rate of 2.5 per cent. These operations were practically all done in the Petersburg Hospital; a few were done in Hopewell, Va., and still fewer in the Central State Hospital.

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OBSERVATIONS IN THE MANAGEMENT OF ONE HUNDRED CONSECUTIVE CATARACT OPERATIONS.*

E. G. GILL, M. D.,
and
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Department of Ophthalmology, Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va.

This is a report of one hundred consecutive cataract operations performed at Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va. In this group are included sixty-six senile, two diabetic, two secondary (cataract extraction was performed elsewhere), twenty-three congenital, two juvenile, and five traumatic cataracts.

The age of the senile group ranges from forty-four years to eighty-one years. In this group of sixty-six operations, thirty-nine were combined extractions, and twenty-seven were performed following a preliminary iridectomy. In regard to the method of operation, sixty-three were extra-capsular, and three were intra-capsular operations. Twenty, or little less than one-third of the extra-capsular operations required capsulotomy at a later date to secure the best vision possible. Two of this group developed detached retinae about ninety days following discissions. On of these had had a vision of 20/20 for two years following the cataract extraction but a discission had to be performed about thirty-six months after operation because of a decrease in vision due to the development of a secondary membrane. A vision of 20/20 was secured after discission until retinal detachment took place. Three conjunctival flap operations had to be performed from four to seven days following cataract extractions because of failure of the incision to heal or because of re-opening of the incision due to trauma. The vision secured ranges from 20/20 to just enough vision to be able to walk about alone. This variation in results is due to the fact that some of these cases were cases of old simple glaucoma, and irido-cyclitis. In no case was the vision entirely lost and in all cases the vision was improved by operation.

In the diabetic group of two cases, age forty-four years and fifty-eight years respectively, both extractions were performed following a preliminary iridectomy. One secured a vision of 20/20 following a discission, but, later, the vision decreased, due to diabetic retinitis. The other case has a vision of 20/40+ but should be improved by capsulotomy as very little retinal change is present. In this group are not included all cases which showed sugar in the urine prior to operation but only those two cases which had been treated for diabetes prior to the failure of vision.

In the secondary cataract group of two cases, both seventy-two years of age, are placed those cases which had extractions performed elsewhere but came in complaining of poor vision. Following capsulo-

*Read before the Virginia Society of Otolaryngology and Ophthalmology, at its annual meeting in Lynchburg, Va., May 5, 1934.

tomy one secured a vision of 20/30 and the other a vision of 20/40.

The age of the congenital cataract group of twenty-three cases ranges from four months to twenty years. In order to secure clear pupils twenty-seven operations had to be performed on the twenty-three cases. The general results were good. The greater proportion of these cases were in a school for the blind and had to be led about. Now all are able to get about alone and attend to their regular duties.

The age of the juvenile group of two cases is twenty years. A total of eight needlings has been performed from time to time in order to retain a vision of 20/20. One of these patients can read, write, sew or perform any of the duties of an ordinary person. Before the development of cataracts she had finished the third year of high school.

In the traumatic cataract group of five cases, ranging from nine years to twenty-two years of age are included four cases who desired to have the "white pupil" removed from their eye, and one case which had a secondary glaucoma due to a dislocated cataractus lens. Two of these cases secured a vision of 20/20 with correction, two a vision of 20/100 with correction, and one needs further operation. The method of operation was needling in four cases, and simple extraction in one case (that of dislocated lens).

PRE-OPERATIVE AND POST-OPERATIVE CARE

Prior to the patient entering the hospital, careful general and special examinations are done. The patient is required to have a general physical examination, including blood pressure, urinalysis, blood count, and Wassermann. Special attention is paid to the possibility of some foci of infection, such as teeth, tonsils, sinuses, and the like. Should the patient be considered a poor operative risk due to diabetes, cardio-renal disease, or some focus of infection, the patient is treated from a general medical standpoint until he is considered safe for operation. At least twenty-four hours before operation the tension of the eye is recorded, the naso-lacrimal duct is irrigated to determine its patency and presence of infection, and a smear from the conjunctival sac is examined for organisms. The patient is required to spend the night preceding the operative day in the hospital. A mild sedative or hypnotic is given in order that the patient may have a good night's rest. About forty minutes before operation a mild sedative, such as codein, is given. About thirty minutes before operation silver nitrate 1 per cent solution is instilled into the conjunctival sac.

Upon entering the operating room the eye is anesthetized with cocain 4 per cent solution or butyn 2 per cent solution. The face and area about the eye is cleansed with green soap and water. The area about the eye is then cleansed with iodine and alcohol, or mercurochrome. The lids are injected with 1 per cent novocain solution, or the facial nerve at the lobe of the ear is injected according to the O'Brien method in order to prevent the patient from squeezing together the eye-lids. In order to secure complete anesthesia of the globe, a subconjunctival injection of 2 minims of 2 per cent cocain solution or of 3 minims of 1 per cent or 2 per cent novocain solution is made. Just before and after the speculum is placed, the eye is irrigated thoroughly with saline or boric acid solution.

Following the operation, 1 per cent atropin solution is instilled, and both eyes are bandaged for forty-eight hours. The patient is required to remain quietly in bed, allowing him to be turned after twelve hours. After forty-eight hours the eye is dressed and as a rule only one eye is bandaged after this first dressing. On the fourth night a cathartic is given. The patient is usually allowed a bed rest the fifth day, and allowed to be up in a chair the sixth day. If no complications develop the bandage is removed the eighth day and the patient allowed to go home the tenth day. Upon going home the patient is instructed to use hot compresses for ten minutes three times a day. If no secondary membrane is present, glasses are prescribed about sixty to ninety days after operation.

CONCLUSIONS

Regardless of the fact that this series of cases show more combined extractions than extractions following preliminary iridectomy, our opinion is that extraction following preliminary iridectomy is a safer operation and the results are better. The operator has an opportunity to learn the patient's reactions and to know what to expect when the cataract is extracted.

No cases showed any infection following operation, although two of our cases had lost one eye following an operation elsewhere. We attribute the

absence of infection to careful preliminary preparation and examination.

All cases performed by the intra-capsular method got good results. However, we consider the extra-capsular method much safer and the final results just as good. *711 South Jefferson Street.*

ABDOMINAL EMERGENCIES.*

M. H. TODD, M. D.,
Norfolk, Va.

Abdominal emergencies, whatever their nature, give rise to somewhat the same general group of symptoms—that is, pain, tenderness, muscle spasm, nausea or vomiting, rise in the leukocyte count, and later on fever and rise in pulse rate In each type of emergency, however, there is a predominance of one or another symptom. Thus, in perforation of stomach or intestine, muscle spasm is the outstanding feature; there is rigidity that is board-like and completely involuntary, and the patient cannot relax his abdominal wall for a moment, no matter how he may try. In acute appendicitis, the outstanding feature is a localized area of tenderness to deep pressure; this is nearly always present, no matter what other classical symptoms and signs may be lacking. In intestinal obstruction, severe cramping pain coming in paroxysms is most prominent in the picture; and a little later, distention. In ruptured ectopic pregnancy, the prominent syndrome is that of shock and internal hemorrhage; in acute pancreatitis, shock.

In general, most of the abdominal emergencies are impressive enough in their signs to signify that something serious is wrong; but sometimes no better diagnosis can be made than that of an acute surgical abdomen.

Abdominal emergencies fall into two groups—those due to injury, and those due to disease. Let me discuss them briefly in these groups.

Emergencies due to injury often present no special difficulty in diagnosis, because there is penetration of the abdominal wall by a knife or a bullet in such a way that the intestine must have been injured, and the need of immediate operation is evident to everyone, including the patient himself.

Sometimes there is doubt about intestinal injury, the wound being perhaps tangential, or a knife wound possibly being only a shallow one; in this case, a good deal of dependence can be placed on the X-ray. The patient is held sitting for a moment, and a film is taken with the X-ray horizontal at the level of the top of the liver, when any escaped gas, even a few c.c., can be seen with startling clearness as a clear curved line between liver and diaphragm.

This use of the X-ray is especially necessary when simply an abdominal contusion has occurred, such as a mule-kick, with no external wound. I wish to emphasize that in such cases, the symptoms of intestinal rupture are apt to be slow in developing; and that the patient may look and feel really quite well for many hours, with no fever or rise in pulse, and still have a rupture of the bowel. There is generally some stiffness of the abdominal muscles and some tenderness, but of course the contusion of the abdominal wall itself could cause these signs. The rapid rise in the leukocyte count ought to help; I have seen it rise in one hour from 6,000 to 40,000. But the X-ray will imperatively point to operation if any gas is shown above the liver, thus settling the problem at once.

Injury to liver, spleen or kidney will give rise to hemorrhage, and thus, if severe, to the signs of internal hemorrhage, when it is again necessary to operate. The spleen, if badly torn, is to be removed; bleeding from the liver has to be controlled by packing or careful deep suture, or both. Sometimes bleeding from the kidney is severe enough to make operation necessary, generally nephrectomy; but in general, kidney wounds are apt to heal if left alone; there is some danger of secondary bleeding later. Injury to the bladder is not always easy to be sure about; the injection of much fluid, or more particularly air, is dangerous; cautious use of radiopaque fluids, or intravenous urography, with the X-ray, give the most reliable information. Such wounds require suture and drainage.

*Read before the Southside Virginia Medical Association at Suffolk, June 12, 1934.

Simple penetrating wounds of the peritoneum itself, by the way, ordinarily take care of themselves perfectly well if simply left alone; operation is only needed if there is visceral injury.

Injuries to the pancreas are uncommon; they give rise to a collection of fluid which presents after a week or so as an epigastric cyst, and this, when drained, leaves a pancreatic fistula. I have such a case now under observation in the stage of the fistula.

Let me now speak briefly of abdominal emergencies due to disease; they are mostly comprised under the general headings of perforation and of obstruction.

Acute perforation of the stomach or intestine, from ulcer, causes, as a rule, such unmistakable rigidity of the abdominal wall that it would not ordinarily be overlooked. I have mentioned this above. Let me call attention to the fact that in a goodly percentage of these cases there is no history of any previous indigestion at all, the perforation coming on out of a clear sky; and let me mention again the great service in diagnosis that can be rendered by the X-ray.

Perforation of the appendix is pretty familiar to you all, for appendicitis is by far the most common of all the abdominal emergencies; but, if you will permit, I should like to say again, as I have emphasized in other papers, that the diagnosis cannot be made with real certainty; that perforation may be present when there are only mild signs of trouble; that fever and rise in pulse are late, not early symptoms; that real rigidity of the overlying muscles is not at all a constant finding; and that the leukocyte count is by no means necessarily an accurate indication of the severity of the trouble. The patient's face may be perfectly tranquil and bright; there may be no nausea; indeed, there may be an appetite for food; there generally is a perfectly definite local tenderness, as I have stated. There is only one path of safety for the patient with appendicitis—operation as soon as the diagnosis is reasonably suspected. Delay too often means peritonitis.

Intestinal obstruction is a calamity that to my mind is harder to definitely diagnose than any other abdominal emergency. Cramping pain is for some time the only symptom present. There is for some time little distention, no fever or rise in pulse rate, no stiffness of the abdominal wall, and not much if any tenderness. Furthermore, enemas will produce results for some hours, and this fact adds to the puzzle. If hernia is the cause, there will be swelling and tenderness over it if inguinal; but in the case of femoral hernia, strange as it may seem, there is quite often no local tenderness or swelling at all, even in the presence of strangulation.

Formerly, it was necessary to wait a while and see; nowadays the X-ray has come to the rescue again, showing gas distention of the small intestine, with fluid levels below the gas if the patient is erect. This finding, however, is also present in obstruction of partial or intermittent grade, and therefore must be interpreted with care. Note that no barium is to be used, for this makes the obstruction only worse.

Up until recently, there was only one treatment—operation, with release of constricting bands, or enterostomy, or resection, as indicated. Recently, however, several authors, Wangensteen, Orr, the Bartletts, and others, have been able to avoid operation in a number of cases by using the inlying duodenal tube with suction, sustaining the patient by giving fluids by vein. This is strictly a method for cases without actual strangulation; in doubt, it is necessary to operate, the penalty for delay in strangulation being an inevitable peritonitis.

Post-operative ileus, which is similar to obstruction and may be confused with it, may be relieved by duodenal tube suction; and more recently a new drug has come to the fore, particularly at Bellevue in Potter's wards—pitressin, given deep intramuscularly every four hours. I have seen it work like a miracle in several patients of my own, relieving a situation that foreshadowed the greatest peril.

A not very infrequent abdominal emergency is rupture of a tubal pregnancy; here the main symptom, beside local pain, is shock from internal hemorrhage. The diagnosis is not generally hard to make, or at least suspect; treatment is immediate operation, with simultaneous transfusion if possible; otherwise, intravenous acacia. After the abdomen is opened, it is entirely proper to citrate the patient's own blood and give it into a vein, and in the absence of a donor this may save life. I have seen a patient with a blood pressure of 60, in air-hunger, at the time of incision, restored to a normal pink color and a pressure of 130 by the time the abdomen was closed. By the way, this procedure,

auto-transfusion, can be used in the case of ruptured spleen; it is said that a ruptured liver changes the blood enough so that it should not be used.

Ruptured ectopic is one of the few conditions, in shock, in which it is necessary to operate at once; in traumatic cases, this is not proper; wait a couple of hours for shock to subside.

Allow me to mention that there are unrelated conditions that may closely mimic the symptoms of abdominal emergencies, and are to be remembered in differential diagnosis; they vary from coronary occlusion to spider-bites, from lead-poisoning, heat-cramps and gastric crises, to pneumonia in children. I simply call attention to their possibility; you have no doubt been confronted with them.

Will you allow me to state again a few fundamentals, with which I know you are all perfectly familiar? Abdominal emergencies are to have no food by mouth, no opiates until the diagnosis is certain, and above all, no laxatives. Analysis in a recent article showed a death rate eight times as high in acute appendicitis cases that had taken laxatives, as in those who had taken none.

Personally, I do not use the ice-cap in acute appendicitis; for more than once it has acted just like an opiate, concealing the very tenderness that I was trying to depend upon to make the diagnosis.

And, finally, do not wait for all the classical signs of trouble to make themselves fatally evident. I have painful recollections of a physician who would never refer me an appendicitis patient for operation unless he had a rise in temperature; so that I got all his cases late, and they were always unusually bad ones.

It is only by early operation that peritonitis can be forestalled, and it is imperative for the patient's life that it be prevented.

712 Botetourt Street.

ACUTE CONGESTIVE GLAUCOMA IN A PREVIOUSLY HYPOTONIC EYE—A CASE REPORT.*

ROBERT H. COURTNEY, M. D.,
Richmond, Va.

For many years it has been known that a characteristic finding in diabetic coma is a soft eye. There have been only a few published references to it but it seems to be an accepted differential point in coma. According to Patek, Krause, in 1903, was the first to call attention to hypotonia in diabetic coma, and shortly thereafter Heine corroborated the finding. In 1916 David Reisman called attention to the findings of Krause and Heine. Middleton reported two cases in 1922, while Patek reported five cases in 1929. Since Patek's reports, hypotony in diabetic coma has been commonly observed. So far as a brief review of the literature reveals, I have been unable to find any reference to hypotony in diabetes without coma. Neither have I been able to find reference to acute congestive glaucoma occurring in a previously hypotonic eye.

CASE REPORT

Mr. W. G., aged 67, consulted us in April, 1933, because of dimness of vision and distortion of objects. The fundi showed very marked arteriosclerosis of the retinal vessels, hemorrhages scattered throughout both retinae and old placques, suggestive of diabetes, around each macula. The vision could not be improved to above 20/80 in each eye. His family physician reported that the patient had been under treatment for diabetes for some time but that his directions as to diet had been carried out indifferently. Examinations of the fundi were made at monthly intervals for the next eight months and at no time were the retinae free from fresh hemorrhages. At each visit the eyes seemed quite soft on digital examination. The visual fields showed numerous small scotomata about the fixation point but were otherwise normal. In January, 1934, he returned because of severe pain in the right eye. At this time there was quite marked edema of both right lids and chemosis of the conjunctiva; there was only slight ciliary injection; the cornea was somewhat steamy; the pupil dilated ovally and fixed; the vessels of the iris were quite engorged. There

*Read before the Virginia Society of Otolaryngology and Ophthalmology, at its annual meeting in Lynchburg, Va., May 5, 1934.

was only a moderate decrease in the depth of the anterior chamber. On palpation the eye felt quite firm and it was indeed much firmer than the left but. measured with the Schiotz tonometer, it was found that the tension of the right eye was only 27 mm. of Hg., while that of the left eye was 10 mm. of Hg. In the presence of such brittle vessels and engorgement of the iris vessels it was deemed unwise to do any operation for the relief of tension. He was, therefore, given a mixture of eserine and pilocarpine. On the following day the patient stated that the pain was less. The tension was reduced to 18 mm. of Hg., but there was no other objective change in the eye. During the next eighteen days the tension remained at 18 to 20 mm., but the eye remained painful, congested, the cornea dewy, and the pupil somewhat dilated. Enucleation was performed on February 14th. Since enucleation of the right eye there has been no appreciable change in the condition of the left eye, the tension remaining at 10 mm. Hg.

Sections of the right eye for pathological study showed the usual changes to be found in congestive secondary glaucoma and nothing remarkable. The cornea was normal. There were rather extensive anterior synechiae; the iris was very edematous; the ciliary processes were atrophic; cystic degeneration of the retina with an occasional retinal hemorrhage was present, and a shallow glaucomatous cup of the optic nerve clearly defined.

The more interesting points in this case to which I wish to call your special attention are, first, the occurrence of hypotony in a diabetic whose sugar level was well under control; second, the complete picture of congestive glaucoma in an eye without an elevation of intra-ocular tension, as measured with the tonometer, above what is usually considered the normal, but in which there was in reality a tension more than two and one-half times greater than that of the fellow eye; and, third, while the tonometer registered a practically normal tension, digital tonometry gave the impression of a rather tense sclera.

Are the symptoms of acute congestive glaucoma due to increased tension, or are they mainly due to congestion? Is it possible, in the presence of atrophic ciliary processes, to have an increase of tension in the posterior segment without influencing the corneal tonometry?

Professional Building.

Correspondence

New Treatment for Duodenal Ulcer.

TO THE EDITOR:

I wish to make a preliminary report of a case of duodenal ulcer, the clinical diagnosis of which was confirmed by skiagraph. This case was first seen November 16, 1934, and was treated with Larostidin (Hoffman-La Roche). At the end of the prescribed treatment, the radiologist reported "Not entirely healed, but marked improvement."

A detailed report of the case will be given later.

RAMON D. GARCIN, M. D.

Richmond, Virginia,
January 4, 1935.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during December, 1934, showed the following cases compared with the same month in 1933:

	1934	*1933*
Typhoid and Paratyphoid Fever	46	63
Diphtheria	238	338
Scarlet Fever	485	609
Measles	818	439
Meningitis	8	10
Poliomyelitis	2	3
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	0
Undulant Fever	3	1
Tularaemia	17	30
Smallpox	16	0

A study of the cases of communicable diseases reported to the State Department of Health for the year ending December 31, 1934, reveals many interesting facts. Though in general the number of cases reported this year was less than in the preceding, small epidemics of some of the unusual diseases should be noted.

An outbreak of poliomylitis in Wise County made the number of cases of this disease the highest reported since 1930. The low level of ten cases of smallpox in 1933 is exceeded this year by fourteen cases, because of two small epidemics in Washington County in October and December. Trachoma is another of the diseases showing a marked increase due to a report of seventeen cases in Wash-

ington County for the month of May. Malaria has very nearly a 33 per cent increase because Southampton and Surry counties both had epidemics in August and September.

On the other hand, the increase in the number of cases of cerebrospinal meningitis cannot be attributed to any localized outbreak but is due to sporadic cases scattered throughout the State. At no time was there any danger of an epidemic. The reported number of cases of Rocky Mountain spotted fever has increased every year since 1931 when it was first separated from typhus fever and 1934 proved no exception. The number of cases this year approximately doubled the number of 1933. However, this does not necessarily mean that the disease is more prevalent, for more careful diagnosis accounts at least in part for this increase.

During the summer of 1934 Virginia experienced its third epidemic of the unusual disease, Dabney's grippe. In 1888 William C. Dabney, whose name the disease bears, described and recorded an outbreak in this State. Again in 1923 interest was revived when another epidemic occurred in the northwestern part of the State. The sporadic occurrence, sudden onset and violent symptoms, make this disease one of peculiar interest and caused it to be dubbed "Devil's Grippe" by its victims. A few cases of unusual flu reported at the end of July this year, were the beginning of the epidemic of Dabney's grippe which rose rapidly to a peak in August and declined abruptly in September.

Since measles has practically a 100 per cent attack rate it is one disease which is epidemic roughly every four years. An epidemic attacks most of the susceptibles and the following years the number of cases is comparatively few, while a new susceptible population is growing up. The peak of the 1933-1934 epidemic of measles was in March. However, this was not alarming for most of the cases were among school children, the group to which public health workers are trying to confine this disease.

In contrast to these diseases are those having a marked decrease in the number of cases reported. The typhoid, paratyphoid, typhus and pellagra reports are the lowest on record for these diseases, and tularaemia, undulant fever, diphtheria, diarrhea and dysentery, chickenpox, whooping-cough, encephalitis and tetanus all had fewer cases than in the preceding year. The other reportable diseases, scarlet fever, tuberculosis, influenza, ophthalmia neonatorum, mumps, syphilis and gonorrhea have approximately the same number of cases each year.

Miscellaneous

TO LOVED PHYSICIANS EVERYWHERE

To One In Particular—

My Husband

ETHEL S. ARMISTEAD

We ask so much of one who comes
In hours of weakness with his strength,
Who enters our familiar rooms,
To anxious hearts
His confidence imparts.
And when the Spectre of the Unknown looms
His knowledge calms and quiets us at length.

We give so little in return
To one who gives us not alone
Advice for which we ask, and pay—
But gives us more,
That something from his store
Of fathering the world from day to day,
And answering its suffering, helpless moan.

He comes to us, our outstretched hands,
And our demands to "Find some power!"—
To "Save this life!"—"Our hope renew!"—
To waiting hearts
His courage strength imparts;
When skill with drug or knife is powerless too
He grieves to be but mortal in Death's hour.

I wish that lives so spent in service
Might one day find waiting cheer
From words that grateful hearts would say;
And when at last,
Strength gone and vigor passed,
He outlives usefulness and crowded days
May faithful care be his when night draws near.

The cooling cup he held to many a lip
May one remember, bring to him to sip
Who gave his strength, his rest, his days, his nights
To help the helpless in the fight of fights.
No term has quite the glory of that word
That links his healing with one called of God.

"Beloved Physician"

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1325 3rd St., Roanoke, Va.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Auxiliary to Postgraduate Medical Society.

The members of this Auxiliary had their second annual shower for the benefit of the Petersburg, Va., Hospital on January 29th. All church organizations, including the Negro members of the community, cooperated to provide sufficient sheets, towels, pillowcases and blankets to carry the hospital through another year. Sponsored by wives of members of the medical profession, the in-gathering netted more than $500.00 worth of materials in 1934 from the support of various church groups and individual donations. The value of the articles for this year had not been estimated at the time of this going to press.

The general committee in charge of the work this year was composed of Mrs. H. M. Snead, Mrs. Meade Edmunds, and Mrs. Philip Jacobson.

Auxiliary to the Richmond Academy of Medicine.

Mrs. Andrew G. Shetter was elected president and Mrs. W. Ambrose McGee, president-elect, of the Auxiliary to the Richmond Academy of Medicine at a recent meeting.

These officers and the others elected January 11th, who are Mrs. T. B. Washington, vice-president; Mrs. F. J. Wampler, recording secretary; Mrs. F. W. Shaw, corresponding secretary; and Mrs. J. O. Fitzgerald, treasurer, will be installed at the February meeting.

The retiring president, Mrs. J. B. Stone, gave a report of the activities of the organization during her term of office. Five guest speakers spoke at meetings. The president of the Auxiliary to the Medical Society of Virginia attended one of the meetings and spoke on the work of the auxiliary, a play was sponsored during the year, volunteer clerical aid was given in the diagnosis campaign of the Richmond Tuberculosis Association, and milk was supplied each school day to twelve undernourished children in the public schools of the city. In November a reception-tea was given honoring the wives of all members of the Richmond Academy of Medicine.

In retiring from office, Mrs. Stone presented to the Auxiliary a scrapbook containing items of interest she had collected in regard to the local organization.

Attention, Physicians' Wives!

Mrs. Joseph Bear, State President, urges all physicians' wives, whether affiliated with auxiliaries or not, to read the articles by National Auxiliary officers, which appear each month in the *Bulletin of the American Medical Association*. They contain news of work accomplished throughout the country and will prove profitable as well as interesting.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Grisard Laboratories
  Chocolate Coated Tablets Scillonin, 0.5 mg.

Lederle Laboratories, Inc.
  Diphtheria Toxin for Schick Test in Peptone Solution, fifty test package
  Staphylococcus Toxoid

Eli Lilly & Co.
  Ampoules Sodium Amytal, 0.065 Gm. (1 grain)
  Tablets Amytal, ⅛ grain

National Drug Company
  Diluted Diphtheria Toxoid for Sensitivity Test, 5 and 50 test packages

Winthrop Chemical Co., Inc.
  Tablets Skiodan, 1 Gm.

The following products have been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Non-official Remedies, 1934, p. 443):

Lederle Laboratories, Inc.
  Quinidine Sulphate (Lederle)
    Capsules Quinidine Sulphate (Lederle) 3 grains (0.2 Gm.)
    Capsules Quinidine Sulphate (Lederle) 5 grains (0.325 Gm.)

Propaganda for Reform

Report of the Council on Physical Therapy.—Physical therapy was in a chaotic condition at the time of the organization of the Council on Physical Therapy by the Board of Trustees in 1925. The chaos that existed was due to the activities of manufacturing agents who were selling apparatus directly to the physicians and to hospitals for "machine therapy." The profession was losing sight of the fact that true physical therapy consisted chiefly of intelligent hand work—namely, heat, massage and exercise—and that expensive machines and apparatus played a minor part in the realm of physical therapy so far as the majority of the profession was concerned. With the conditions confronting the newly formed Council, it can be readily understood that the first two or three years of the Council's existence were devoted to self-education of its members; to formulating rules of procedure that could withstand criticism; and to months—even years—of study of certain physical phenomena used in physical therapy before it could refute or approve the therapeutic claims made by certain manufacturers. From a summary of the past work of the Council it can be stated that physical therapy is now in much better repute with the entire profession than it was at the time the Council was organized.

Then justifiable skepticism was warranted by the misuse of physical therapy. Today patients are receiving more and more of that type of physical therapy that is of real value to them. There is still a great amount of work to be done and the Council will continue to guard zealously this field of physical therapy in order to prevent all irregular practices and to strive to enlarge its scope and usefulness for the benefit of the profession and the public at large. (Jour. A. M. A., December 8, 1934, p. 1776.)

Book Announcements

Synopsis of Genitourinary Diseases. By AUSTIN I. DODSON, M. D., F. A. C. S., Richmond, Virginia. Professor of Genitourinary Surgery, Medical College of Virginia; Genitourinary Surgeon to the Hospital Division, Medical College of Virginia, etc. 12mo. of 275 pages. With 111 illustrations. St. Louis. The C. V. Mosby Company. 1934. Leatherette. Price, $3.00.

The medical compend is too often either a disappointment to those competent to give it critical estimation; or else a snare to those more trustful souls who are lured by its sweeping, sometimes dangerous, generalizations. Very occasionally such a booklet squarely meets its mission and it becomes then of very distinct value and usefulness not only to the harried student or the busy practitioner but also to the specialist, who finds himself solidly enjoying a bird's-eye view of the fundamentals of his work, stripped of the vast accumulation of contributory data.

It is a pleasure to recognize in this synopsis by a Richmond urologist a conspicuous example of this latter desirable type of manual. As can be readily understood, the best effort in such a direction is likely to come from the hands of a teaching clinician who is compelled by force of circumstances to compress within a curriculum of limited hours the whole scope of a field to which he is devoting his own entire time and thought. Dr. Dodson's duties in the classroom, combined with his wide experience and competence as an active genitourinary surgeon, have served him admirably and the result is wholly commendable.

The text is well arranged and sufficiently illustrated with a few photographs and numerous illuminating pen and ink drawings. The essential anatomy of the urogenital tract, so necessary to an understanding of its pathology and therapeutics, is adequately described and there is a brief but very helpful introductory chapter upon the underlying principles of urologic diagnosis. Instruments and minor procedures that may be appropriately assumed by the novice or the general practitioner are considered in some detail but the more complicated diagnostic and surgical technique is wisely omitted since it could serve no other purpose than to confuse the picture. Separate chapters are then devoted to the various disorders encountered in the genitourinary system and as one inspects this little volume minutely, it is surprising to note the thoroughness and soundness with which this great field has been covered. With no waste of words and yet with sufficient regard for the requirements of lucid exposition, the author in brief, pointed paragraphs provides an insight into all the problems of urology—with one exception. The book is deficient in its attention to the functional disorders so conspicuous—and so troublesome—in this field. Dr. Dodson is well aware of this omission and in the subsequent edition, which will certainly be required of him, will remedy this oversight so far as may be practicable with a subject often baffling to the most skillful urologist. Not the least attractive feature of the book is an excellent index, something not invariably present even in works of much greater pretension.

It is easy to predict that this admirable synopsis will find a ready place not only in the college for

which it was primarily designed but in many other institutions as well, to say nothing of the general practitioners who will look to its brief pages for safe, easily assimilable advice and instruction.

JOSEPH F. GEISINGER.

Periodic Fertility and Sterility in Women. A Natural Method of Birth Control. By PROFESSOR HERMANN KNAUS, Head of the Clinic for Gynecology and Obstetrics of the German University of Prague. With a Foreword by Professor F. H. A. Marshall, F. R. S., Cambridge. Authorized English Translation by D. H. Kitchin and Kathleen Kitchin, London. Vienna. Wilhelm Maudrick. 1934. Octavo of vi-162 pages. Cloth. Price, $6.50 postfree.

Professor Knaus is well known for his important investigations in the physiology of reproduction. In this volume he has collected his own researches and those of others in a fascinating manner in the support of his thesis that the human female is fertile for only a short period in her menstrual cycle. This is known to be true in animals, but its application to woman has been so fraught with apparent contradictions that it is generally believed that conception may occur at any time in the menstrual cycle. Our author has attacked the problem from a biological standpoint in a masterly manner. He shows *in vitro* that the optimum temperature for spermatozoa of warm-blooded animals is between 10° and 15° C. Furthermore in the body, heat is inimical to them. The epididymis is the storehouse for spermatozoa and the seminal vesicle is a misnomer. The function of the scrotum is a heat regulatory, or rather a refrigeratory, one. In the tail of the epididymis with its relatively lower temperature and its increased CO_2 tension spermatozoa retain their motility and fertility for weeks, but at body temperature they deteriorate in a few days. This explains the sterility of cryptorchid and is true when this condition is produced artificially. It also explains why the spermatozoa in the female genital organs of a rabbit remain fertile for a maximum of thirty hours and motile for only forty-eight hours at the most. The spermatozoa of all mammals with scrotal testicles lose their fertility within forty-eight hours of coitus under the influence of abdominal temperature to which they are exposed in the female genitalia, and of the alkaline secretion of the accessory male sex glands with which they are mixed during ejaculation.

In a like manner Knaus attacks the question of the time in which the ovum may be fertilized. The ripening of the ovum is a degenerative process and proceeds without remission unless it becomes fertilized by the spermatozoa. When the ovum is extruded from the follicle and begins its journey towards the tube it is surrounded by a laminated covering of follicle cells loosely attached to the surface of the ovum. In a very few hours after ovulation they are shed completely, leaving a smooth spherical surface, which starts to clothe itself in an albumin sheath, much as a bird's egg does in its passage through the oviduct. An extremely thin coating of albumin is sufficient to prevent the ingress of a spermatozoon. The law that the ovum is only fertilizable for a few hours after ovulation applies to all warm-blooded species.

If the spermatozoa remain fertile for only forty-eight hours in the female genital tract and the ovum is fertilizable for only a few hours, the problem then is to determine the time of ovulation. In the human female this has been a baffling one. Gynecologists have attempted to solve it by noting the stage of development of the corpus luteum at operation upon patients at various days of the menstrual cycle. This has led to conflicting opinions. Newell and his co-workers washed out the tubes at operation, collecting the ova when present in sterile petri dishes. From an examination of such ova they were of the opinion that ovulation took place between the 12th and the 14th day of the cycle. Knaus attached the problem in a very ingenious way. The presence of the corpus luteum inhibits the contractions of uterine muscle and renders it unresponsive to the action of extracts of the posterior pituitary. He devised an apparatus for recording the contractions of the normal human uterus *in situ*. By testing the response to the injection of pituitrim at various times in the menstrual cycle, he showed conclusively that the duration of the corpus luteum was fourteen days irrespective of the type of menstrual cycle. In other words ovulation occurred fifteen days before the oncoming menses. In the light of this work one can paraphrase Fraenkel's old adage "The only regular thing about regular monthly period is its lack of regularity" to "the only regular thing about the monthly period is the duration of the corpus luteum." If a woman keeps a record

of the onset of her menstrual periods she can very definitely fix the time of ovulation on the chart fifteen days before each period. In the course of a year according to Knaus, she can know accurately just when in her menstrual cycle she is fertile. The ovulation date is that period which falls between the ovulation days of the shortest and longest cycles. Conception can take place only during this time and the two days immediately preceding it. When he takes the responsibility of advising women concerning the days in the menstrual cycle on which they are unlikely to conceive, he lengthens the conception period as determined in this way by a day at the beginning and a day at the end.

The book makes interesting biological reading and it is fascinating to follow the experiments the author outlines in arriving at his conclusions. The proof reading seems to be poorly done. On page 80 it is stated "This evidence bears out the opinion that spontaneous and forced ovulation can occur together in the same organism," when it is evident it means it cannot occur. In a case report on page 97 "In 1933 after a normal confinement she was delivered of a living child. In 1924 she suffered from inflammation of both tubes and ovaries." One would imagine that the real date of confinement was 1923 especially as both tubes were removed in 1926.

M. PIERCE RUCKER.

Report on Seventh International Congress of Military Medicine and Pharmacy and Meetings of the Permanent Committee. Madrid, Spain, May 29-June 3, 1933. By CAPTAIN WILLIAM SEAMAN BAINBRIDGE, MC-F., USNR., New York, member of the Permanent Committee. Delegate from the United States. Octavo of 88 pages. Cloth.

Proceedings of the Twenty-Eighth Annual Convention of the Association of Life Insurance Presidents. Held in the Waldorf-Astoria, New York. December 13 and 14, 1934. Printed in U. S. A. Octavo of 240 pages. Paper.

New Books at the Library of the Medical College of Virginia.

The following books, received recently at the Library, are available to our members, the only cost being return postage:

Bell, E. T.—The Search for Truth.

Bolton, J. S.—The Cortical Localisation of Cerebral Function.

Brown, Wm.—Psychology and Psychotherapy.

Bundensen, H. N.—Dr. Bundensen's Diet Book.

Burridge, W.—A New Physiological Psychology.

Caldwell & Lundeen—Do You Believe It?

Charles, E.—The Twilight of Parenthood.

Clendening, L.—Methods of Treatment. 5th ed.

Coombs, C.—Rheumatic Heart Disease.

Crowther, J. G.—The Progress of Science.

Drinker & Field—Lymphatics, Lymph and Tissue Fluid.

Frank, G.—America's Hour of Decision.

Harrington & Wolseley—The Copyreader's Workshop.

Heine, L.—Uber Haftglaser.

Hemmeter, J. C.—Master Minds in Medicine.

Hirsh, E. W.—The Power to Love.

Jeans, J.—Through Space and Time.

John, H. J.—Diabetic Manual for Patients.

Kirkpatrick, E. A.—Mental Hygiene for Effective Living.

Krecke, A.—The Doctor and His Patients.

Larsell—Jöns Jacob Berzelius.

Marlin, T.—Manipulative Treatment for the Medical Practitioner.

McConnel, J. K.—The Adjustment of Muscular Habits.

McFarlane, J. E. C.—The Case for Polygamy.

Medical Research Council, Special Report Series.
No. 190—A Study of Growth and Development.
No. 192—Housing Conditions and Respiratory Disease.
No. 195—Active Immunization vs. Diphtheria.
No. 196—The Inheritance of Resistance up to Bacterial Infection in Animal Species.

Metalnikov—Role du Systeme Nerveux et Des Facteurs Biologiques et Psychiques dans L'Immunite.

Mohr, O.—Heredity and Disease.

Moore, F. J.—A History of Chemistry.

Phillips, M. C.—Skin Deep.

Ricketts, P. C., Amos, Eaton, author, teacher, investigator—B. Franklin Greene and the Reorganization in 1849-50.

Sigerist, H. E.—American Medicine.

Sigwald, J.—Le Sucre Agent Therapeutique.

Stitt, E. R.—Diagnostics and Treatment of Tropical Diseases.

Stitt, E. R.—Practical Bacteriology, Blood-Work and Animal Parasitology.

Stone, C. T.—The Dangerous Age in Men.

Sutton, R. L.—Disease of the Skin. 9th ed.

Sylvest, E.—Epidemic Myalgia.

Vehrs, G. R.—Spinal Anesthesia.

Voge, C. I. B.—The Chemistry and Physics of Contraceptives.

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Editorial

On Reading the Annual Reports of the State Hospitals for Mental Patients.

What does the average doctor know about how his state is caring for its large insane population? What does he know about psychiatry and the directions of psychiatric progress? And are these questions interrelated?

He perhaps knows that the first insane asylum in this country was at Williamsburg, and that in Virginia the Negro suffering from mental disease was first institutionalized. He may be acquainted with the fact that today the State of Virginia supports five enormous institutions dedicated to the care of the insane, the feebleminded and the epileptic; that the population of all of these institutions is close to ten thousand; that they are maintained by yearly appropriations of more than a million dollars; that they represent a capital outlay of many more million dollars; and that none of them adequately meet the demands made upon them. He is conscious that great progress has been made since 1676 when Bedlam was in operation; since 1792 when Pinel struck the chains from these unfortunate people; since the middle of the Nineteenth Century when it first dawned upon the world that insanity was a disease manifestation and not demoniacal possession. He has heard of and taken pride in the progressive attitude of his state in the matter of the sterilization of the feebleminded and he is pleased to know that next to California the State of Virginia outranks all other states of the union in the number of such eugenic procedures. He recalls that all of these institutions were once called asylums and now they are known as hospitals and he interprets that to mean progress and so it was meant to be. Still the question arises, have we yet fully deserved the right to that distinction? Are our State institutions (for the great majority of patients they harbor) asylums for detention or hospitals for diagnosis and treatment?

Does the average doctor realize that the insane are often still being lodged in jail pending commitment and this for lack of some type of local intermediary station—reception hospitals—in which they may be housed and properly classified while waiting acceptance by the State hospitals in which overcrowding prevails and where painful delay often retards the process of commitment. Does he appreciate the need for local hospitals for the reception and study of mental cases in the early and curable stage with up-to-date outpatient departments and teaching connections, such as the Maudsley Hospital in London? Does he realize the importance of prevention and of mental hygiene in the schools, or how much improvement in the psychiatric teaching of both doctors and nurses is still possible and how little the vast array of clinical material in the State is being utilized? Does he know

how little the population at large has been educated along the lines of the proper care of the insane and the possibilities of child guidance clinics and community service in the indoctrination of the tax paying public with a sense of its responsibility toward mental disease?

Every doctor who reads the Annual Reports of the State Hospitals which are before us will no doubt be surprised to find that on only two of the five special boards which consist of three members each is the medical profession represented, in each instance by only one doctor. Which means that when the general board convenes, made up as it is of all the special boards only two of its fifteen members are physicians. There should be at least one doctor on each special board—better still if a majority of the board was composed of physicians. More physicians on the boards would perhaps result in a different allocation of expended funds. For example even a superficial scrutiny of what is apparently the policy of all of these hospitals is sufficient to convince the interested person that all of them are constantly in the midst of physical expansion. There is not a hospital in the State that is not engaged in erecting some new building, but it must be apparent even to the uninitiated, that in all of these hospitals there is a striking dearth of skilled personnel. The great Central State Hospital at Petersburg, with more than 3,000 patients, has only eleven trained nurses and four physicians besides the superintendent. More medically minded boards would be expected to agitate for funds for research and for the more careful study of this large institutionalized fraction of our population. They would at once sense the need for more physicians, more trained nurses, and better equipment. Such boards would appreciate the fact that after all these are general hospitals and should be so equipped and so operated. They would provide means for more thorough post mortem studies, securing the services of trained pathologists in both gross and microscopic diagnosis and they would make the section available not only to the staff, but to practicing physicians and medical students as well. They would see the need for better segregation of patients, and they would appreciate the vast educational possibilities of these institutions, and in doing so they would quickly find the means to tie them intimately to the two medical schools of the State. They would also see the possibility of making each and every institution a great center of postgraduate education for the doctors of the State of Virginia.

The Louse in History.

Hans Zinsser's *Rats, Lice and History,* a foretaste of which appears in the January issue of the *Atlantic Monthly* promises to be an informative as well as interesting book, because the distinguished professor of bacteriology at Harvard not only "knows his stuff" but enjoys the reputation of being able to write. The article before us is an entertaining account of the louse in history. The louse was introduced into literature years ago by Robert Burns in lines that will always be remembered. In society the louse needs no introduction since he was living with man on terms of the greatest intimacy at the dawn of civilization.

Medicine is interested in the louse primarily because of its relation to typhus fever. Zinsser points out that he "shares with us the misfortunes of being a prey to the typhus virus. If lice can dread, the nightmare of their lives is the fear of some day inhabiting an infected rat or human being. For the host may survive; but the ill-starred louse that sticks his haustellum through an infected skin, and imbibes the loathesome virus with his nourishment, is doomed beyond succor."

We are informed that the modern louse is of two varieties, one sucking and the other biting, and that they are both parasitic developments probably from an ancient order of pre-cockroaches, from which our present cockroaches and termites have also been derived, a relationship not unlike that of man and the higher apes. We are told that "by adapting itself to parasitism, the louse has attained the ideal of bourgeois civilization, though its methods are more direct than those of business or banking, and its source of nourishment is not its own species."

Although lice are found on most animals an interchange of host is not usually possible, each animal having its own peculiar kind. It has been suggested that the spider monkeys were first infected with lice from man when he appeared in tropical America after the Old World dispersion. "The *pediculus humanus nigritarum,* or head louse of the African Negro, is slightly different from the head louse found on European and modern American heads." But in this country there seems to be "no correlation between louse types and racial types of the human hosts. It appears that America, the melt-

ing pot of human races, has also become the melting pot of lice." The body louse developed from the head louse, but only when the host began to wear clothes. It appears that primitive races do not harbor body lice.

The antiquity of the louse's association with man is attested both by the presence of nits upon the hair of ancient mummies and by the presence of the embalmed bodies of the lice themselves. This association was long taken quite naturally. Until very recently respectability and breeding imposed no barriers to the age-long companionship. But now that cleanliness has become fashionable among the upper classes, and among the middle class "the bathtub is no longer used for storing coal," the louse has about gone. However poverty and distress are not altogether vanished, and until they are, the louse will remain, and as long as we have the louse, so long will we have to fear typhus fever.

Hanging Separately.

The medical profession of Virginia needs to become more vocal, and something must be done to put power behind its spoken opinion. Among other things the Medical Society of Virginia needs some properly constituted committee which will be on its toes to see that the medical profession is duly consulted and its wishes regarded in all appointments pertaining to the health of the people of Virginia.

Several local medical societies as well as a number of individual physicians recently protested the appointment of a layman to head the new government Facility near Roanoke. In spite of these remonstrances General Hines and his organization appear to be moving right ahead with their plans. The scattered protests of the medical profession have been about as effective as the beating of African tomtoms in the interest of rain.

The recent appointment of two laymen to vacancies on the General Hospital Board of the State sets one to speculating whether or not this may not also have been accomplished over the protests of the officials of the Medical Society of Virginia.

A vacancy now exists in the State Department of Public Welfare. No one has yet been named to the Bureau of Mental Hygiene. One wonders with whom the powers on Capitol Hill will confer before naming Dr. Drewry's successor.

Time was when the physician could afford to be a chronic individualist. He enjoyed oracular powers and revelled in being looked up to. He was consulted by his neighbors on all subjects, professional and otherwise, and his advice was heeded. He liked being the paragon Robert Louis Stevenson described him. In a less complex society there was no need for mass action.

Times have changed. The public now accepts nothing as authoritative. A newspaper squib on health has more weight than the family physician. Anatomical and physiological knowledge gained in high school is unabashed before the superior training of the physician. The claims of specialization have played a part in this independence of popular attitude. The average patient now decides what his own ailment is and seeks directly the specialist who is believed to possess superior skill in this particular field, with the same self-assurance and eclat with which he would call the plumber for a broken pipe or a carpenter for a hole in the fence.

The physician is to blame for this attitude. He has not been quick to realize that the individualist has no chance in a highly organized society. Some of his dearest perquisites will be lost unless he learn to work with his fellows against thoughtless encroachments of others. His medical society must be something more than his professional inspiration. It must become his spokesman in all matters concerning the conditions of his practice. He must learn again the secret of the guild. Those powerful groups of the Middle Ages organized for mutual aid and protection were tremendously effective in securing the objects sought.

In union there is strength. Alexander and his Greeks knew this when their united phalanxes again and again swept before them the superior hordes of equally brave Persians, and setting out from Macedonia did not rest until they had planted the banners of the conqueror of the world in the courtyard of the Pharaohs. The old Roman knew this when he demonstrated to his quarrelling sons that whereas a single faggot could be easily broken, a bundle of faggots would resist the strength of the best of them. A signer of the Declaration of Independence knew this when to his wavering fellow patriots he said: "If we do not hang together we will hang separately."

Theobald Smith.

The distinguished old man died the other day at Princeton, N. J., in his seventy-sixth year. Dur-

ing his long career he occupied many positions of importance, the last being Director of the Department of Animal Pathology of the Rockefeller Institute of Medical Research. Many honors and distinctions came to him. He will long be remembered as a pioneer in the study of the nature and causation of infectious and parasitic diseases and in immunological research. In 1886 he showed that immunity from hog cholera can be conferred upon an animal who has received an injection of the filtered products of the specific organism. In 1889 he described the *pyrosoma bigeminum*—the cause of Texas fever—and demonstrated its transmission by the cattle tick. In 1893 he discovered "the Theobald Smith phenomenon"—an anaphylactic reaction produced by the bacterial products of diphtheria. In 1898 he differentiated the human from the bovine type of tubercle bacillus. Few American pathologists have left so large a scientific legacy.

Early Returns.

Only 325 of the 1,800 ballots on birth control mailed to members of the Society on January 1st have been heard from at the time this issue goes to press. These first returns indicate a decided trend in favor of contraceptive practice. The next issue of the MONTHLY will carry a full tabulation of the ballot. By that time we hope the vote will have been swelled many fold and it is possible that there may be a significant shift from the sentiment already expressed. The vote as tabulated on January 18th showed 72 per cent of the profession favoring birth control, 12 per cent favoring it with reservations—a total of 84 per cent. The ballots thus far received have been about equally divided between the cities and the rural districts. Eighty per cent of the rural doctors advocate contraceptive measures. Ninety-five per cent of urban physicians are in favor of them.

President's Message

To the Entire Membership of the Medical Society of Virginia:

Through reading of the journals, both professional and lay, you are acquainted with the widespread agitation over and the demand for some sort of "Sickness Insurance." This issue seems to have become acute recently, especially since the appointment of the President's Committee on Economic Security. You have doubtless seen in the public press that, in the Ten-Point Program of Social Relief tentatively proposed by this Committee, one item is "Provision for meeting the economic risks of illness!"

We do not know what the recommendation of this Committee will be on questions most vitally concerning the medical profession. We do know that there is persistent propaganda by the proponents of sickness insurance in favor of legislation by this session of Congress. We hold that the medical profession should make up its mind on these questions; should formulate its point of view, and then press it as vigorously as possible through all proper and available channels.

The Medical Society of Virginia, through adoption by the House of Delegates of a report of its Committee on Medical Economics in the fall of 1932, expressed itself definitely as opposed to any form of Sickness Insurance. Has our opinion changed in the meanwhile? Should we modify our stand, or should we simply re-state our position in the langauge of the report of 1932?

Feeling the serious importance of this matter, and the necessity of promptly taking action in conformity with the prevailing professional opinion in Virginia, I am *calling a meeting of the Council of the Medical Society of Virginia at 2:00 P. M., February 11, 1935, at the Society's office, 1200 East Clay Street, in Richmond.* The Standing Committee on Medical Economics will meet with the Council.

While the Council is the official body to act for the Medical Society between sessions of the Society, this matter is of such general and profound importance to the entire membership, that I am hereby *inviting each and every member of the State Society to attend this meeting in person and express his views.* Or, from those who find it impossible to attend in person, *I invite letters* setting forth as

concisely and as definitely as possible your views (1) concerning any form of governmental control of medicine, other than that already in force; (2) any suggestion that is practicable to correct faulty or inadequate medical service to *all the people,* should such exist; (3) what definite action, if any, the Medical Society of Virginia should take in the premises. These letters should be addressed to me as President, at Abingdon, Va.

"Speak now, or forever after hold your peace!" No one should reserve the privilege of complaining over the conclusions or action the Council may arrive at, if you fail to take advantage of this sincerely offered invitation to express your views at, or in advance of, this meeting.

Yours faithfully,

F. H. SMITH, M. D., *President,*
Medical Society of Virginia.

Department of Clinical and Medical Education of the Medical Society of Virginia

Lecture Notes of Dr. Lapham Still Available.

Although there have been a number of requests for the mimeographed lecture notes on Prenatal and Postnatal Instruction by Dr. M. E. Lapham, the supply is not yet exhausted. So long as the supply lasts, sets of these notes may be obtained free, if the requests are sent to the Executive Secretary of the Department, Box 1487, University, Va.

Lecture-Clinic on Pediatrics Planned at South Boston

At a regular meeting held in South Boston on the evening of January 17th, the Halifax County Medical Society adopted unanimously a recommendation that the Society sponsor during the spring, in cooperation with the Department of Clinical and Medical Education, a lecture-clinic in the subject of pediatrics. The general plan of procedure recommended was that followed by the Department in carrying forward the postgraduate work in the subject of Pediatrics at Leesburg last summer, under Dr. George M. Lyon. However, since the lecture-clinic was proposed for the late winter or early spring months, a period of unusual activity for the general practitioner, the Society recommended that if possible arrangements be completed to hold the lecture-clinics, of which there will be ten in all, only two days each week for five weeks, rather than one each day for two weeks. Under this arrangement, the members of the Halifax County Society felt that the physicians could so arrange their work as to attend all of the meetings without interrupting seriously their regular practice. The Executive Secretary, acting for the committee of the Department of Clinical and Medical Education, was requested to go forward with the plans for the clinic. The Halifax County Society will sponsor the program locally.

Dr. I. K. Briggs is president of the Halifax County Medical Society and Dr. William C. Brann is secretary.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

The Northampton County Medical Society

Held its regular quarterly meeting Friday, January 4, 1935. At this time, Dr. G. W. Holland, of Eastville, Va., councilor from the First District, and representative of the County Society to the State Meeting, gave a report of the Alexandria session.

Officers for 1935 were elected as follows: Presi-

dent, Dr. J. R. Hamilton, Nassawadox; vice-president, Dr. J. M. Lynch, Cape Charles, and secretary-treasurer, Dr. W. Carey Henderson, Nassawadox.

James City-New Kent Medical Society.

At the December meeting of this Society the following officers were elected and installed for the coming year: President, Dr. B. I. Bell, Williamsburg; vice-president, Dr. E. B. Kilby, Toano; and secretary-treasurer, Dr. L. V. Henderson, Williamsburg.

The October meeting was set aside as Ladies' Night, and is to be an annual affair hereafter. The wives of the members were present at that meeting, dinner was served, and a good time was enjoyed by all.

The Patrick-Henry Medical Society

Held its regular quarterly meeting in Martinsville, Va., on January 3rd, at 7 P. M. The guest speaker of the evening was Dr. J. W. Preston, of Roanoke, Va., whose subject was "Some Observations Upon the More Common Type of Pneumonia."

The officers of the Society for this year are: President, Dr. F. B. Teague, Martinsville; vice-president, Dr. B. A. Hopkins, Stuart, and Secretary, Dr. C. R. Titus, Bassett.

The Floyd County Medical Society,

At its last meeting held recently, elected the following officers: President, Dr. S. T. Yeatts, Floyd, and secretary, Dr. F. Clyde Bedsaul, also of Floyd.

The Roanoke Academy of Medicine

Held its regular meeting at the Elks Club, January 7th at 8:30 P. M., under the presidency of Dr. W. P. Jackson, of Roanoke. At this time Dr. A. T. Cole, of Catawba Sanatorium, was elected to membership in the Academy.

The following Scientific program was presented:

Intestinal Obstruction—Case Reports—Dr. P. A. Richards.

Discussed by Drs. Preston and Stephenson.

Syphilis, with Relation to Eye, Ear, Nose and Throat Complaints—Dr. John A. Pilcher.

Asthma—Dr. K. D. Graves.

Recent Progress in Combating Tuberculosis—Dr. Fred Oast.

Discussed by Drs. Hagan, Nicholls, and Gill.

FRANK HELVESTINE, JR.,
Secretary-Treasurer.

The Lynchburg Academy of Medicine

Met Monday, January 7th. At that time Dr. I. A. Bigger, Professor of Surgery of the Medical College of Virginia, presented an interesting and stimulating paper on "Primary Malignancies of the Lung" illustrated with lantern slides.

Dr. R. D. Caldwell is president of the Academy and Dr. John Hundley, Jr., secretary. Both are of Lynchburg, Va.

News Notes

The Tri-State Medical Association of the Carolinas and Virginia,

Under the presidency of Dr. Paul V. Anderson, Richmond, Va., will hold its annual meeting in Charlotte, N. C., February 18th-20th. An excellent program has been prepared and will be mailed members in a few days. Included in this are some of the best known men in the country who will present papers or conduct clinics.

Dr. J. M. Northington, Charlotte, N. C., is secretary of this Association.

To Head Health Work in Albemarle County and Charlottesville.

Dr. Charles Howe Eller has been named by the Joint Board of Health as public health officer for Albemarle County and the city of Charlottesville, the position formerly held by Dr. E. L. McQuade, now with the State Health Department. Dr. Eller comes from Albuquerque, N. Mex., where he is health officer for the county of Bernalillo. He is thirty years of age and a graduate of the University of Colorado School of Medicine, and received the degree of Doctor of Public Health from the Johns Hopkins School of Hygiene and Public Health, Baltimore. Before serving as health officer in Albuquerque he engaged in private practice. He will enter upon his new duties on April 1st.

News from Medical College of Virginia.

Dr. Hunter McGuire, of Winchester, Va., has been appointed to the Board of Visitors of the col-

lege to fill the vacancy made by the death of Colonel John W. Williams.

The college was represented by a goodly number of its faculty at the dinner for Dr. S. C. Mitchell on January 23rd. This dinner was sponsored by the University of Richmond where Dr. Mitchell is professor of history and political science. Early in February Dr. Mitchell will leave for an extended trip abroad and the dinner is in the nature of a birthday celebration and bon voyage party in recognition of his outstanding service to education and to civic welfare. Dr. Mitchell has been president of three institutions, the University of South Carolina, University of Delaware, and the Medical College of Virginia.

The portrait of Dr. Socrates Maupin, one of the founders of the college, is now being painted by Mr. John Slavin, of Richmond.

Dr. James Gudger '30, and Dr. Emory Anderson '33, have gone to Paris where they will serve a year's interneship at the American Hospital there.

The regular scientific monthly meeting of the staff was held January 10th. The program was as follows:

Simple Cyst of the Liver with Report of a Case, by Dr. Harry Warthen and Dr. V. H. Griffin.

Treatment of Megacolon with Calcium Parathormone with Report of Three Cases, by Dr. Louise Galvin.

Roentgentherapy, Some of its Present-Day Problems, by Dr. Frederick B. Mandeville.

Dr. A. M. Ambrose of the physiology and pharmacology department has recently collaborated with Dr. C. P. Sherwin, of New York, in writing a chapter on detoxification for a new textbook on biochemistry to be released on February 1st.

News from New York Polyclinic Medical School and Hospital.

Dr. Pol N. Coryllos gave an afternoon lecture on January 12, 1935, on "Surgical Treatment of Pulmonary Tuberculosis."

Dr. Russell L. Cecil will give an afternoon lecture on Wednesday, February 6, 1935, at 2:30 P. M., on "Foreign Protein Therapy."

Members of the medical profession are invited to attend all programs and lectures presented at the Polyclinic Hospital.

The Duke University School of Medicine

Began its winter quarters on January 3, 1935, with a total of 183 students. The School of Nursing, starting the quarter at the same time, had a total of fifty-nine. Six seniors in the School of Medicine completed their course December 18, 1934, and are now interning in various hospitals.

The Gill Memorial Eye, Ear and Throat Hospital

Will hold its Ninth Annual Spring Graduate Course in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Bronchoscopy and Esophagoscopy, in Roanoke, Va., April 15th-20th. The guest members of the faculty are Drs. Oscar V. Batson, Philadelphia; William V. Mullin, Cleveland; Lyman Richards, Boston; John A. Kolmer, Philadelphia; Harry S. Gradle, Chicago; Ben Witt Key, New York; Ralph I. Lloyd, Brooklyn; A. B. Reese, New York; and Dunbar Roy, Atlanta. The resident members are Drs. Elbyrne G. Gill, John A. Pilcher, Jr., J. Lawson Cabaniss and Mr. Nathan Ridgeway, all of Roanoke. All lectures, demonstrations and operations will be given at the hospital, and the round table discussions will be at the Patrick Henry Hotel each day immediately following lunch.

Further information may be received from the Superintendent of the Hospital, Box 2467, Roanoke, Va.

Dr. J. L. DeCormis,

Accomac, Va., has been elected president of the Eastern Shore of Virginia Production Credit Association, for the present year.

Dr. Cary T. Grayson,

Of the U. S. Navy retired, and physician to the late President Wilson, has been appointed by Governor Peery as a member of the Board of Visitors of the College of William and Mary. Dr. Grayson is a native of Culpeper, Va., and an alumnus of that College.

Southeastern Surgical Congress.

The sixth annual assembly of the Congress will be held in Jacksonville, Fla., March 11, 12 and 13, 1935. It has met previously in Atlanta, Bir-

mingham and Nashville. The states composing the Congress are Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. A record attendance is anticipated at the Jacksonville meeting. Since March is the most desirable month to visit the land of flowers many surgeons will no doubt combine business and pleasure and attend during this season of the year.

Some of the most distinguished surgeons in the country representing the different surgical specialties have been invited to appear on the program. A partial list of those who have already accepted places is as follows: Drs. Walter C. Alvarez, Perry Bromberg, Hugh Cabot, Willis C. Campbell, George W. Crile, John F. Erdmann, Paul Flothow, Ralph Green, Arthur Hertzler, C. Jeff Miller, Alton Ochsner, J. C. Patterson, J. Knox Simpson, J. W. Snyder and W. A. Weldon. More than twenty others will be listed when the program is completed. Look for the completed program which will be mailed about February 15, 1935.

For information address Dr. B. T. Beasley, Secretary-Treasurer, 1019 Doctors Building, Atlanta, Ga.

Dr. A. I. Dodson

Has been elected first vice-president of the Civitan Club of Richmond, Va., for the present year.

Chief Medical Officer at Roanoke Hospital.

Dr. Letcher E. Trent, a veterans' administration psychiatrist, has been appointed chief medical officer of the new Veterans' Administration Facility at Roanoke, Va., and will enter upon his duties there before the first of March. Dr. Trent is an alumnus of the former College of Physicians and Surgeons of Baltimore. After service in the Army medical corps during the World War, he entered the civilian Government service and has had wide experience in neuropsychiatry. In his new position, he will have charge of all of the clinical and medical activities of the Roanoke institution.

Dr. Henry L Bastien,

Formerly medical officer at C. C. C. Camp No. 96, Williamsport, Pa., has located for general practice at Clarendon, Va., with offices in Post Office Building. Dr. Bastien is an alumnus of the Georgetown University School of Medicine in the class of '32.

Famous Medical Journal Editor Dies.

Dr. Lewis Stephen Pilcher, scholar and editor for half a century of the *Annals of Surgery,* died December 24th, at eighty-nine years of age. Country school teacher, country practitioner, naval surgeon, student of tropical disease, anatomist, professor of surgery, editor, bibliophile, patrioit—these nouns indicate a few of his many interests and activities over a long and intensely useful life.

In 1884 he became editor of the *Annals of Surgery,* which position he occupied to the time of his death. This publication, beginning in 1884, was acquired in 1897, by J. B. Lippincott Company, but the editorial policy and censorship of advertising were never relinquished by Dr. Pilcher. The *Annals of Surgery* will continue to carry on under an editorial board of distinguished writers.

Petersburg Hospital Staff.

Dr. Wilbur M. Bowman was elected chairman of the Petersburg, Va., Hospital Staff, at its annual meeting early in January. He succeeds Dr. W. A. Reese. Other staff officers are: Dr. E. J. Nixon, vice-chairman; Dr. Wright Clarkson, secretary; Dr. H. M. Snead, vice-secretary. Dr. Herbert C. Jones was named a member of the medical committee; Dr. E. J. Nixon chairman and Dr. H. Cantor secretary of the surgery committee. Dr. E. W. Young, chairman, and Dr. W. B. McIlwaine, secretary of the medical committee; Dr. Meade Edmunds, chairman of the eye, ear, nose and throat committee; and Dr. Allen Barker, chairman of the X-ray department.

Dr. Wayne M. Phipps,

Hopewell, Va., has been elected one of the directors of the Kiwanis Club of that city for the present year.

Married.

Dr. J. E. Haynesworth, Buckingham, Va., and Miss Paula Irving, Farmville, Va., January 19th.

Dr. Arthur Clayton Sinton, Jr., and Mrs. Virginia Chesterman Wickham, both of Richmond, Va., January 15th.

Dr. Thomas Preston McKee, of the class of '31, University of Virginia, and Miss Rose Clifton, Clarksburg, W. Va., January 12th. Dr. McKee is a son of Dr. and Mrs. T. K. McKee, of Saltville, Va., and recently interned at the New York Postgraduate Medical School and Hospital, of New York City.

Dr. H. A. Spitler,

Middleburg, Va., has been re-elected first vice-president and a member of the board of directors of the Middleburg National Bank.

Dr. Dan O. Nichols,

Charlottesville, Va., has been elected a member of the new board of directors of the Kiwanis Club of that city.

Dr. Paul McBee

Announces the removal of his surgical practice from Bakersville, N. C., to the Marion General Hospital at Marion, N. C. He will have offices there in the Monogram Building.

Dr. Paul S. Hill,

Class of '30, University of Virginia, has opened offices in Professional Building, Harrisonburg, Va., for the practice of general surgery.

Dr. Charles W. Scott,

Former clinician to the Tuberculosis Outpatient Service of the Virginia State Health Department, recently practicing at Hampton, Va., has now moved to Newport News, Va. He is associated with Dr. L. E. Stubbs and Dr. Waverly Payne in the practice of internal medicine, with offices in Medical Arts Building. Dr. Scott recently spent several weeks at the University of Virginia Hospital studying cardiac diseases and electrocardiography under Dr. J. Edwin Wood.

Dr. Clifton M. Miller,

Richmond, Va., by invitation gave a series of talks on the eye before the International Postgraduate Medical Assembly in San Antonio, Texas, January 29th, 30th and 31st.

Dr. J. G. Bentley,

For sometime at Blackwood, Va., announces that his address is now Pardee, Va.

Negro Doctor Honored.

Dr. Morgan E. Norris, Negro physician of Kilmarnock, Va., was recently honored when a new school at that place, costing approximately $15,000, was named for him with appropriate exercises. Dr. Norris was the promoter of the project and it was through his effort that the school was erected.

Dr. Louis Klein,

After a long term of noteworthy service with Parke, Davis and Company, on January 1st assumed direction of all the Hoffman-La Roche medical activities at Nutley, N. J. Notwithstanding his heavy responsibilities in the commercial field Dr. Klein has made it an important point to remain above all a physician, for behind his reputation in the marketing of high quality pharmaceutical products are ten years of active practice of medicine. He has maintained his clinical connections right along and, until leaving Detroit to go with Hoffman-La Roche, was on the medical staff of Harper Hospital, and until recently also he was consulting endocrinologist to the Wayne County Juvenile Court in Detroit. Dr. Klein is a member of the Association for the Study of Internal Secretions, County and State Medical Societies, and a Fellow of the American Medical Association.

Dr. R. A. Martin's Memory Honored.

The city of Petersburg has presented the Petersburg Health Center with a portrait of the late Dr. Robert Alston Martin, who served as health officer of that city from 1899 to the time of his death, April 1, 1931. The portrait has been hung above the bronze plaque erected in memory of Dr. Martin in the Health Center by his co-workers, shortly after his death.

Dr. E. G. Gill,

Roanoke, Va., has accepted an invitation extended him recently to become a member of the Advisory Council of the American Brotherhood for the Blind. This is a non-sectarian, non-profit organization, devoted solely to the service of the sightless. During the past fourteen years, this Association has published a large amount of Braille literature and these publications as well as other services are free to the blind.

Dr. V. W. Quillen,

Nickelsville, Va., left the first of January to spend several months in New Orleans, La., for postgraduate review courses in medicine at Tulane University.

Civil Service Examination.

The U. S. Civil Service Commission announces an open competitive examination for Junior Medical Officer (Interne), at St. Elizabeth's Hospital, Washington, D. C. Applications for this position must be on file with the Manager of the Fourth U. S. Civil Service District, Washington, D. C., not later than February 18, 1935.

Dr. R. E. Booker,

Lottsburg, Va., has been elected vice-president and a member of the board of directors of the Bank of Northumberland, Inc., of Heathsville, Va.

Dr. E. L. W. Ferry,

Millers Tavern, Va., has been elected one of the stewards for this year of the Arlington Masonic Lodge, No. 102, A. F. and A. M., at that place.

Dr. M. M. Greenbaum,

Class of '34, Medical College of Virginia, recently at the Morrisania Hospital, New York City, is now interning at the Paterson General Hospital in Paterson, N. J.

Dr. P. R. Fox,

McComas, W. Va., an alumnus of the Medical College of Virginia, has been elected president of the Mercer County (W. Va.) Medical Society.

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Obituary Record

Dr. William Tilden Smith,

Widely esteemed physician of Norfolk, Va., died at his home in that city on December 28th, after an illness of nearly a year. He was a native of King and Queen County, Virginia, and fifty-six years of age. He studied medicine at the Medical College of Virginia from which he graduated in 1904. Following this, he practiced for a year in Essex County, Virginia, before locating in Norfolk where he had since made his home. Dr. Smith had been a member of the Medical Society of Virginia for thirty years; he was active in the civic, professional and church life of Norfolk, and was a Mason and Kiwanian. He is survived by his wife, an adopted daughter and a large family connection.

Dr. Frank Powell Dickinson,

Fredericksburg, Va., died of heart disease, October 31, 1934. He was seventy-six years of age and a graduate of the former University College of Medicine, Richmond, Va., in 1899. Dr. Dickinson was at one time a member of the Medical Society of Virginia.

Dr. Charles Dudley Underhill,

Middlebrook, Va., died about January 10th, after several years of failing health. He was sixty-eight years of age and a graduate of the Harvard University Medical School, Boston, in 1888. Dr. Underhill was also a church organist and had composed and published many pieces of sacred music. He was formerly a member of the Medical Society of Virginia and was in service during the Spanish-American War. His wife and a daughter survive him.

Dr. Heath Ashby Dalton,

Hillsville, Va., died December 2nd, of heart disease. He was forty-five years of age and a graduate in the class of '14, Medical College of Virginia.

Dr. Theobald Smith,

Princeton, N. J., died December 10th, aged seventy-five years. He was a graduate of the Albany (N. Y.) Medical College in 1883. Dr. Smith was a widely known pathologist and his contributions to medical science have been varied and of far-reaching importance. He was probably most widely known for his differentiation of the human tubercle bacillus from the bovine tubercle bacillus. Honorary degrees from a number of universities in this country and abroad had been awarded Dr. Smith and he was also the recipient of many medals for his scientific achievements. At the time of his death, Dr. Smith was director emeritus of the Department of Plant and Animal Pathology of the Rockfeller Institute for Medical Research.

Resolutions on Death of Dr. J. W. Henson.

The Staff of the Retreat for the Sick Hospital of Richmond, adopted the following resolution on Dr. Henson:

Dr. J. W. Henson was born October 3, 1863, at Scottsville. He was a representative of families established in Virginia more than two centuries ago. He was the son of Mrs. Marie Antoinette Hoge Henson and the late William Henry Henson, who served with distinction in the Confederate army with the Fourteenth Virginia cavalry.

Dr. Henson spent his early life at the old family home in Louisa County and was a pupil in turn at the Green Springs Academy, in Louisa and the Hoover Select Military Academy at Staunton, Virginia. He later continued his studies at Richmond College and then taught school for a brief period. He entered the Medical College of Virginia in the fall of 1886 and was graduated from that institution with the M. D. degree in the spring of 1889.

Dr. Henson was a brilliant and forceful teacher and taught continuously at the University College of Medicine and Medical College of Virginia from 1890 to about 1923. During that period he served as Adjunct Professor of Anatomy, Demonstrator of Anatomy, Professor of Anatomy, Professor Surgical Anatomy, Lecturer on Principles of Surgery, Professor of Principles of Surgery, Professor of Genitourinary Surgery, Demonstrator in Orthopedics and Associate Professor of Surgery.

He was also devoted to many charitable institutions and in this connection will probably be best remembered for his work in the Woman's Relief Association. He was active in its organization in 1922 and was chairman of the staff from its inception until the time of his death. He was also actively associated with the Retreat for Sick Hospital and under his guidance the staff was reorganized several years ago and brought up to a standard which was acceptable to the American College of Surgeons, which standard it has maintained until the present time. He was for many years Chief of the Surgical Staff and Chairman of the Executive Committee and was active in this work up until a few months ago, when he resigned on account of ill health.

Dr. Henson was a kind and sympathetic physician. He possessed a keen sense of clinical judgment which he diligently and fruitfully applied to his practice. Through his earnest and conscientious efforts in behalf of those to whom he ministered, he was invariably able to gain their confidences and friendships, both of which he held in many instances throughout his entire professional life.

Therefore, be it resolved, That in the death of Dr. J. W. Henson, which occurred at the Retreat for the Sick, on November 28, 1934, the Retreat for the Sick Hospital has sustained a great loss, likewise the city and community in which he labored with such boundless charity, and

Be it further resolved, That these resolutions be spread upon the minutes of the Staff of the Retreat for the Sick, that a copy be sent to the bereaved family and that they be published in the VIRGINIA MEDICAL MONTHLY.

THOS. D. JONES,
W. L. BALL,
Committee.

Resolutions on the Death of Dr. John Dunn.

The Richmond Society of Ophthalmology and Otolaryngology has expressed the following appreciation of Dr. Dunn:

Dr. John Dunn was born in Petersburg, Virginia, November 4, 1862, and as a boy received his preparatory education at McCabe University, and how well he absorbed the teachings of its peerless headmaster can be attested by his life. He later entered the University of Virginia, where he won his M. A. and M. D. degrees.

His post graduate work was only ended by his recent illness, for he was always the student, contributing articles of note to the leading medical publications, especially the Archives of Ophthalmology. His storehouse of knowledge was always open to his confreres for the asking, and time has proven the inestimable value of his advice to the younger members of his profession. There have been none who has given more liberally of his talents to rich and poor alike, than Dr. John Dunn, and we would accord to him the title, "Richmond's First Citizen."

Although an indefatigable worker, he found time to indulge his faculty of keen appreciation of nature's great works, and his soul expanded in the contemplation of the giant oak or the modest flower.

He was meticulously honest in his opinions, in fact, in every phase of his life and never adopted the frills and fads of medical practice, as he, in his busy day, had time only for the essentials. Frills and fads were incompatible with his ideals. We like to think of him as the cultured gentleman practicing a noble profession as it should be practiced, as a true disciple of Hippocrates.

Therefore be it resolved, By the Richmond Society of Ophthalmology and Otolaryngology that in the passing of Dr. John Dunn, we have lost a valued counselor whose experience, knowledge and judgment will be sadly missed; that we wish to express to the family of Dr. Dunn our deep sympathy in their bereavement.

And, be it further resolved, That a copy of these resolutions be sent to the family of Dr. Dunn, a copy spread upon the minutes of the Society and published in the VIRGINIA MEDICAL MONTHLY.

W. WALLACE GILL,
KARL S. BLACKWELL,
R. HERBERT WRIGHT,
Committee.

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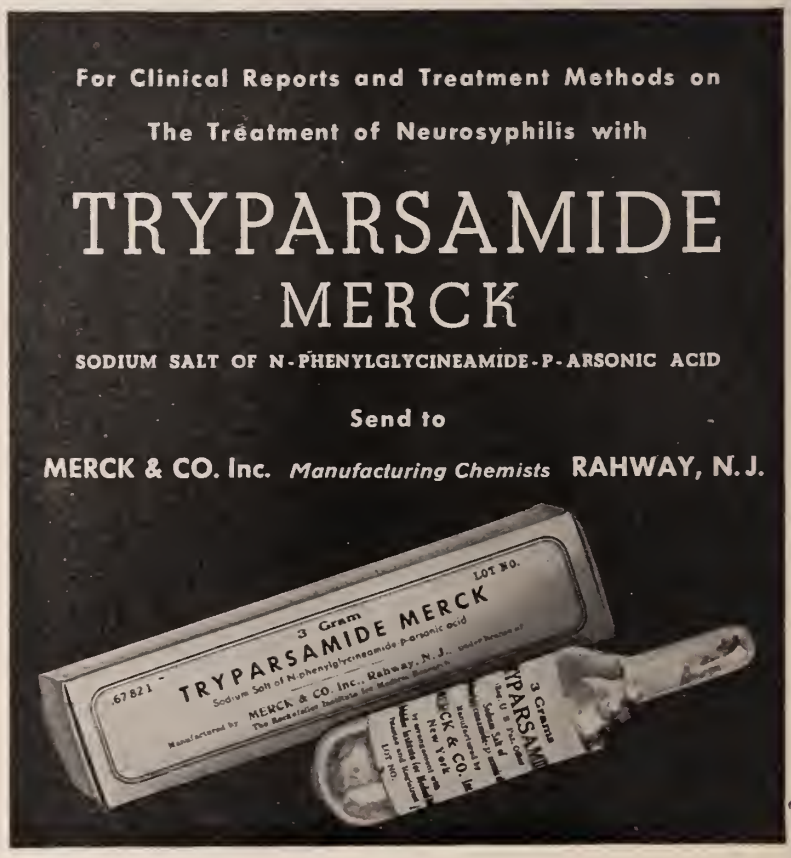
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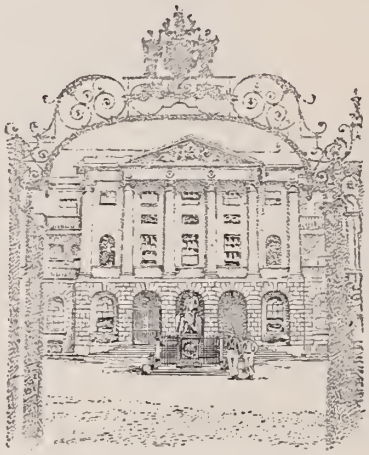
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FINAL RESULTS OF BIRTH CONTROL BALLOT

The following questionnaire was mailed to all members of the Medical Society of Virginia on January 1, 1935:

1. Do you favor birth control? Please state objections if you have any.
2. Do you prescribe contraceptives?
3. What kind of contraceptives do you advise?
4. Do you give this advice for any other reason than the preservation of health?
5. What is your specialty?
6. Post office address.

—o—

Total number of ballots sent out 1,833
Total number of answers to this time 400

Attitude according to Specialty

Specialty	Total	Yes	Yes with reservations	No	Per cent favorable
General Practice	200	126	32	34	79
Obstetrics and Gynecology	39	28	9	1	94.87
Other Specialties	161	141	10	6	93.78
Total	400	295	51	41	86.5

Note—13 gave indefinite answers and are not included in tabulations.

Attitude according to Location

Location	Total	Yes	Yes with reservations	No	Per cent favorable
Urban	207	166	28	9	93.7
Rural	193	129	23	32	78.75

Objection Stated

Religious	11
Race suicide	4
Sexual abuse	8
Injurious to health	1

Do You Prescribe Contraceptives?

Answer	Number	Per cent
Yes	242	60.5
No	127	31.75
Unanswered	31	7.75

—o—

A similar questionnaire recently sent out to the doctors of Michigan gave the following results:

Number of ballots sent out 1,846
Number ballots returned 1,745

	Number	*Per cent*
For birth control	1,538	83.37
Against birth control	207	11.21

A NEW CONCEPTION OF PELLAGRA.*

BEVERLEY R. TUCKER, M. D.,
Richmond, Va.
Professor of Nervous and Mental Diseases, Medical College of Virginia

Any discussion of pellagra that is not in entire concord with the Goldberger theory of dietary deficiency, especially vitamin G, is certain to precipitate controversy if not acrimony. To do this, however, is not my object. I do not claim to have finally solved the problem of either the etiology or of the treatment of pellagra and I should like to say at the onset that I have high regard for Dr. Goldberger's work and that I feel he made invaluable contributions to our knowledge of this devastating disease. His theory, I think, has put necessary emphasis on what is probably the chief factor in rendering the individual susceptible to pellagra, but we should not shut our minds to further consideration, investigation or even speculation as to the cause of a disease that is still responsible for the death of thousands of the citizens of Southern States each year.

As evidence that pellagra is still a death dealing disease and that it caused more deaths during the "fat years" of prosperity when food variety was better than during the "lean years" of depression in spite of the fact that two severe droughts also occurred during these lean years, the following statistics are presented.

U. S. PUBLIC HEALTH SERVICE—DR. W. H. SEBRELL

Reports Death Rate in Pellagra in the Registration Area

Year	*No. of Deaths*	*Rate per 100,000*
1927	5,418	5.0
1928	6,969	6.1
1929	6,793	5.8
Total	19,180	
Less	1,097—for two states not registered in 1927	
	18,083—during the "fat" years	
1930	6,333	5.3
1931	5,091	4.3
1932	3,694	3.1
Total	15,118—during the "lean" years	

*Read by title at the sixty-fifth annual meeting of the Medical Society of Virginia, at Alexandria, October 9-11, 1934.

VIRGINIA—DR. W. F. DRAPER

Reports Number of Cases of Pellagra Reported, Number of Deaths and Death Rate

Year	*Number of Cases Reported*	*Number of Deaths*	*Death Rate*
1926	238	116	4.9
1927	411	156	6.5
1928	460	193	8.0
1929	352	228	9.4
Total	1,461	693—"fat" years	
1930	811	217	8.9
1931	696	200	8.2
1932	530	127	5.2
1933	188	115*	4.7*
Total	2,225	659—"lean" years	

*Subject to change on account of delayed reports.

ALABAMA—DR. J. N. BAKER

Reports Number of Cases of Pellagra Reported and Number of Deaths

Year	*Number of Cases Reported*	*Number of Deaths*
1926	647	502
1927	754	552
1928	823	698
1929	882	670
Total	3,106	2,422—"fat" years
1930	623*	635
1931	1,120	448
1932	702	350
1933	566†	355†
Total	3,011	1,788—"lean" years

*Only a limited number of the cases occurring in a state are diagnosed and reported.
†Provisional.

LOUISIANA—DR. J. A. O'HARA

Reports Deaths Due to Pellagra

Yeath	*Number of Deaths*
1927	333
1928	333
1929	286
Total	952—"fat" years
1930	278
1931	240
1932	177
Total	695—"lean" years

GEORGIA—DR. DANIEL L. SECKINGER

Reports Number of Deaths from Pellagra

Year	*Number of Deaths*	
1926	425	
1927	617	
1928	846	
1929	871	
Total	2,759—"fat" years	
1930	713	
1931	563	
1932	492	
1933	419*	
Total	2,187—"lean" years	

*Provisional and subject to correction.

FLORIDA—DR. HENRY HANSON

Reports Number of Deaths from Pellagra

Deaths "fat" years—1926-27-28-29	953
Deaths "lean" years—1930-31-32-33	840

NORTH CAROLINA—DR. D. F. MILAM

Reports Death Rate in Pellagra

Year	*No. of Deaths*	*Rate per 100,000*
1926	459	15.5
1927	688	22.8
1928	860	28.
1929	953	30.4
Total	2,960—"fat" years	
1930	1,015	31.2
1931	696	21.5
1932	405	15.0
1933	386	11.5
Total	2,502—"lean" years	

MISSISSIPPI—DR. H. C. RICKS

Reports Death Rate in Pellagra

Year	*Rate per 100,000*	
1922	24.4	
1923	22.2	
1924	22.0	
1925	29.5	
1926	29.3—normal years	
1927	35.4	
1928	38.0	
1929	36.6—"fat" years	
1930	28.5	
1931	26.6	
1932	15.0—"lean" years	

Deaths for 1933 have not been tabulated.

MISSISSIPPI—DR. H. C. RICKS

Reports Number of Cases of Pellagra

Year	*No. of Cases*	
1926	7,393	
1927	11,847	
1928	13,874	
1929	13,928	
Total	47,042—during the "fat" years	
1930	10,173	
1931	11,226	
1932	5,741	
1933	5,856	
Total	32,996—during the "lean" years	

A survey of the foregoing tables will show that in Virginia the number of *reported* cases was greater for the four lean years of depression than for the fat years of prosperity, Alabama's *reported* cases were slightly greater during the fat years, and in Mississippi the number was greatly more during the four fat years. I haven't the statistics of *reported* cases from other states. Reported cases, as far as statistics are concerned, are most unreliable for many cases are not reported. However, nothing is more certain than death and there was not a single instance in which, in the seven Southern States investigated, that the *number of deaths* during the fat years of prosperity was not greater than during the lean years of depression. This was further confirmed by the death rate statistics of the registered area from the United States Public Health Service.

Dietary deficiency, including that of vitamin G, probably contributes to the susceptibility to pellagra, and so, in a lesser degree numerically, does chronic alcoholism, chronic tuberculosis, chronic digestive disturbance, prolonged mental states, and morphinism. But there must be a "Madam X" in this house of disease and death, or pellagra would not occur in such startling preponderance south of the Potomac, nor in this area would it have such definite place selectivity, nor would it appear acutely, right before our eyes and under our noses, in institutions where all the patients are on the same diet, nor would it have such a definite seasonal relationship, nor would it have cleared up and recurred in the same patient long before anything was known of vitamin G or other vitamin feeding, nor would it occur as a rule in only one member of a family, nor would it,

at times, be almost epidemic, nor would it be likely that its pathological manifestations would be, almost consistently, in certain cutaneous areas, in certain parts of the alimentary canal and in certain portions of the nervous system.

The disease was first accurately described and reported in this country by Dr. Searcy, of Alabama, in the early part of the present century and the present superintendent of the Alabama Insane Hospitals, Dr. W. D. Partlow,[1] most intelligently argues against the dietary cause of pellagra in favor of an infectious theory. He stresses the fact that during the height of pellagra in the south he visited southern and northern institutions and, while the dietary was practically the same, there was not a single case in the northern institutions; he feels that, as evidence of infection, pellagra was much more virulent and fatal in its early invasion of this country and that it has become more attenuated as the years pass; he also believes that if the dietary experiments tried for pellagra had been performed in connection with tuberculosis the same beneficial results would have been obtained.

An editorial in the *Journal of the American Medical Association*[2] for February 21, 1931, states that in 1924 the death rate from pellagra was 2.5 in each hundred thousand, and rose in 1928 to 5.7, and in 1929 to 5.5. The editorial went on to say that there was much in the incidence of pellagra to suggest a microbiotic etiology. It then cited the theory of Bliss that iron deficiency was a possible cause, and then says many clinical students of pellagra still believe that the last word regarding the nature of the disorder has not been spoken.

Dr. S. D. Blackford,[3] of the University of Virginia, in a paper read before this society at its meeting last year, indicates that pellagra could be cured, at least in some cases, by a balanced diet regardless of vitamin G. In my experience with the disease, which has extended back to 1909, many cases have recovered without yeast, liver or much food supposed to be rich in vitamin G. Dr. Sebrell,[4] of the United States Public Health Service, states, wisely, I think, that he prefers to use the term of an unknown "pellagra prevention vitamin" in the place of vitamin G. Inquiry from six Southern State hospitals reveals the fact that the superintendents of four of these institutions reported the development of pellagra in patients on the so-called pellagra prevention diet and two reported no development. This diet is supposed to consist of sweet milk, buttermilk, skim milk and evaporated milk; lean beef, lean pork, liver, corned beef, canned salmon, haddock and other fish, kale, turnip tops, spinach, cabbage, green peas, green beans and tomatoes.

If people developed pellagra when not on a vitamin G or a pellagra preventive diet, then the hundreds of millions of people of Japan, China, India, Egypt, to say nothing of many other countries, would be devastated by the disease. But, in fact, pellagra is very rare or non-existent in these countries. Liver feeding is almost specific for pernicious anemia, still the lack of liver eating does not cause pernicious anemia. No one ever heard of vegetarians being susceptible. Just because some dietary element or elements benefit or prevent pellagra is no reason to believe that the lack is the cause of pellagra.

It has been stated that there is no drug treatment indicated in pellagra. With this I disagree. It would appear to me that iron and arsenic, even more than liver, are useful in certain stages to combat the anemia and dilute hydrochloric acid should be given when this is absent in the gastric juice. I have also found that frequent doses of castor oil, recommended by Dr. McCall, of LaGrange, Ga., are valuable in the acute diarrheal stage.

Let us now consider the possibility of a virus infection as the cause of pellagra. Among the virus diseases are acute anterior poliomyelitis, smallpox, herpes zoster, influenza and that form of encephalitis which follows influenza. Pellagra much more resembles these diseases in its epidemiology, place incidence, seasonal tendency, and its acute, chronic and recurrent forms, than it does scurvy, rickets, beri-beri, malnutrition and other dietary deficiency diseases. Extensive differential diagnoses cannot here be attempted and a brief comparison to acute anterior poliomyelitis shall have to suffice. Both pellagra and infantile paralysis have epidemic forms; both sweep over large areas of the country, but infantile paralysis selects chiefly the colder areas,

1. Partlow, W. D., *Alabama Medical Journal,* December, 1931.
2. Editorial, *Journal A. M. A.,* Vol. 96:8:614, February 21, 1931.
3. Blackford, S. D., *Virginia Medical Monthly,* June, 1934.
4. Sebrell, W. H., *Virginia Medical Monthly,* June, 1934.

for instance, north of the Potomac River, while pellagra occurs south of the Potomac; both have seasonal occurrence; both have place (local) incidence; infantile paralysis occurs chiefly in childhood while pellagra chiefly in pre-mid-life adulthood; both rarely affect more than one member of a family, indicating individual susceptibility; both attack the nervous system although in different areas; and both have marked trophic disturbance, infantile paralysis mainly in certain muscles, pellagra in certain cutaneous and mucous membrane lesions.

But the pathology is the most important factor pointing to the possible cause of pellagra, greater than merely its clinical study, and the pathology of pellagra has been largely neglected. In the examination of two brains, six cords and one sympathetic ganglionic chain presented by me at the American Neurological meeting in June, 1934, and another ganglionic chain since examined, pellagra was found to affect the brains but slightly, the cords diffusely and especially in the cervical and lumbar enlargements, and the spinal sympathetic ganglionic chains extensively. A review of the literature was made in that paper. From this study I was led to the conjecture that a virus would be the most likely agent to cause this neuropathological distribution. It is well known that the virus of influenzal-encephalitis has especial selective affinity for the basal ganglia, that of infantile paralysis for the anterior horn cells of the cord, and that of herpes for the posterior ganglionic cells of the sensory roots. It is well known that the pathology of these diseases is not always confined to these selective areas but that encephalitis can affect other parts of the brain and even the cord, that poliomyelitis may expand to constitute a polio-myelo-encephalitis, and that herpes zoster may lead to a virus encephalitis. It is my belief that pellagra in its pathology is chiefly a disease of the nervous system with a selection for the sympathetic ganglionic chain but that it may also involve the cord and even at times the brain.

In support of the contention that the pathology of pellagra is chiefly neurologic, I call attention to the literature of autopsies of the central nervous system, In my paper before the American Neurological Association, not yet published, I presented slides of brains, cords and spinal sympathetic ganglia. I now present slides of another spinal sympathetic ganglia case showing marked degeneration. As far as I can ascertain, Harris,[5] of New York, in his book on pellagra, was the first other observer who has called attention to the fact that there are changes in these ganglia. Langworthy[6] found marked pigmentary changes in the cells of the autonomic and sensory ganglia in one case.

Further, in 1916, I[7] stated that the cutaneous lesions of pellagra corresponded to the distal part of the cutaneous area of distribution of certain posterior nerve roots. Our present pathological studies seem to strengthen this previous observation. Further still, Denton[8] in twelve autopsy studies, and others also, have found but little disturbance of the small intestines but practically constant changes in the mouth and colon. This leads me to feel that not only are the skin lesions in all probability due to trophic disturbance of cordo-ganglionic origin, but that the gastro-intestinal lesions are also due to this pathology. Both the gastro-intestinal and the cutaneous lesions appear to be trophic rather than self instituted.

Reflex and other organic neurological signs are found in probably 25 per cent of the run of pellagra patients, and mental symptoms are, of course, not infrequent. Organic neurological signs and mental symptoms are common to practically all very severe cases. Spinal cord involvement will account for the organic neurological signs, while a general toxemia with, at times, infiltration to the brain, will, I think, account for the psychoses, and spinal ganglionic sympathetic chain involvement with its spinal cord connections for the cutaneous and gastro-intestinal manifestations. A filtrable virus is certainly the most likely cause of such distribution of involvement.

The points to be considered in this study are that:—

The Goldberger theory of a dietary deficiency, especially vitamin G, being the entire cause of pellagra should be modified to being a contributing cause.

5. Harris, H. F., Pellagra. Macmillan & Co., New York. 1919.
6. Langworthy, Orthello R., *Brain,* 54:291, September, 1931.
7. Tucker, B. R., International Clinics, 1: Series 26, 1916.
8. Denton, James *Amer. Jour. Trop. Med.,* 5:173-210, March, 1925.

The "pellagra preventive vitamin" diet does not always prevent pellagra.

Pellagra in this country consistently caused more deaths during the "fat" years preceding the depression than during the "lean" years of the depression and drought.

Pathologically, pellagra seems to be a neurological disease because the cutaneous and gastro-intestinal lesions, as well as the nervous and mental manifestations, of pellagra appear to be of neurological origin.

Pellagra may have especial selective action on the spinal sympathetic ganglionic chain.

Pellagra more closely resembles disease of virus origin than that of food or vitamin deficiency or of infectious organism origin.

Finally, let me say that the whole question of pellagra should be re-opened just as it was after the maize theory seemed to have settled it. There is need of facilities and money for further investigation and experimentation which is beyond the grasp of an individual worker. A much larger series of spinal sympathetic ganglia should be studied. The portal of entrance of a possible pellagra virus should be studied, the relation of the cutaneous and alimentary canal lesions to the spinal sympathetic ganglia and the spinal cord should be confirmed or denied, the relation of visceral disturbance in pellagra to the spinal sympathetic ganglia should be ascertained and solutions from the spinal sympathetic ganglia and spinal cords of patients immediately dead of pellagra should be made and tested upon animals and possibly upon condemned criminals. When these things are done the story of pellagra will be a different story.

NOTE:—I am indebted to Dr. Frank Apperly, Professor of Pathology of the Medical College of Virginia, for an autopsy supplying a cord and the sympathetic ganglia in one case, and to Dr. Pusch and Dr. Ingersoll, of the Medical College of Virginia, for their work in preparing and staining the slides for this paper and aid in the pathological interpretation of these slides. I am also indebted to Dr. H. C. Henry, of the Central State Hospital, Petersburg, Virginia, for two brains and cords and two chains of spinal sympathetic ganglia of pellagrins, and to Dr. J. R. Gill, for detailed clinical histories of these cases; to Dr. J. H. Pound, of Chattahoochee, Florida, for two brains and cords; also to Dr. Walter Freeman, for two cords of pellagrins and a cord of a case of ascending central neuritis for comparison; also to Dr. C. F. Williams, of the South Carolina State Hospital, Columbia, South Carolina, for posterior ganglia. I also wish to thank the health officers of Virginia, North and South Carolina, Georgia, Alabama, Florida, Mississippi and Louisiana and Dr. Francis Wheeler and Dr. W. H. Sebrell, of the United States Public Health Service, for certain statistics on the incidence and mortality of pellagra. I am indebted to Dr. W. D. Partlow, of the Insane Asylums of Alabama, for a copy of his discussion of the etiology of pellagra.

212 West Franklin Street.

THE PROGRESS OF SURGERY DURING THE LAST FORTY YEARS.*

GEORGE TULLY VAUGHAN, M. D., LL.D., F. A. C. S.,
Washington, D. C.

When invited by Dr. Gill to address you on this occasion I asked him what the subject should be. On his replying that I could select my own subject, I suggested discussion of the U. S. Constitution or a subject in Surgery, being not unwilling to criticise the Constitution, and express my disapproval of all the amendments from the 13th to the 19th, inclusive. If there had been more doctors in Congress some of the amendments would never have been adopted. Dr. Gill preferred a subject in Surgery such as Improvements in Surgery During the Last Forty Years. While including a somewhat longer period of time, I shall speak chiefly of the surgery of the brain, the heart and the lungs. First, a few general preliminary remarks.

What are the greatest discoveries in the history of Medicine?

1. Correct knowledge of anatomy. Previous to the time of Vesalius, Galen and others taught that man had one less rib than woman, suggested by the Bible account of the creation of woman; that the sternum consisted of seven bones, and that the uterus was a two-horned organ as in some of the lower animals. Vesalius ran great risk owing to

*Address at the post-graduate exercises at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., April 12, 1934.

the prohibition of dissection by the Church and was forced to get his material by stealth. In this way he secured the skeleton of a criminal who had been hanged in chains in Louvain and roasted alive. The birds had picked the bones clean of the cooked flesh and left a good skeleton.

2. The circulation of the blood. The correct account given by Harvey, completing the work of the martyr Servetus and others.

3. We make a leap of two hundred years, during which there was little of importance done, when we come to the discovery of anesthesia, the work of several men, as has often been the case in the development and completion of some great law or principle. There is no doubt that Long first used ether as a general anesthetic, and he was soon followed by Morton, Jackson and Wells in causing its general adoption. The ancients used alcohol in some form as an anesthetic. When one is dead drunk his sensations are very much diminished.

4. The discovery of antisepsis and asepsis by Lord Lister, aided by the work of Pasteur.

5. Bacteriology, the science of which was established by Pasteur, Koch, and many others, showing the agents which cause infection, how to recognize them, cultivate them, and by inoculation produce the original disease. These three, anesthesia, asepsis and bacteriology, make the trilogy of modern surgery.

6. The Röntgen ray, one of the most wonderful discoveries in nature and one of the greatest aids in diagnosis, was the result of the work of several men. The electric egg of the Abbé Nollet, who, in 1753, used glass globes in which the air had been exhausted and became luminescent on passing an electric current through them. In 1878 Sir William Crooke sealed two metallic discs inside the globe, anode and cathode, and wonderful phenomena occurred on passing an electric current through them, causing Sir William to speculate on a new world, where matter may exist in a fourth state. In 1895 William Röntgen, while using a Crooke's tube, discovered the remarkable penetrating powers of the rays. My first acquaintance with the use of the Röntgen or X-ray was in February, 1897, when I examined an apparatus used in Philadelphia and of which, with Dr. T. Richie Stone, I had charge and helped to manage in a Washington Hospital to which it was transferred. I soon gave up my part in its management as I was sure there were many things about it not then understood and I did not care to take the risk. One of my friends who took charge of the work soon after, and has continued in it as a specialist, has lost one hand and several fingers on the other hand. Too much cannot be said as to the great value of the X-ray in revealing to sight almost every thing within the human body, especially foreign bodies; the position of fractured or dislocated bones, their shape and density; the heart, lungs and hollow viscera when properly prepared by filling with a comparatively impervious material. It is also being used, more and more, as a therapeutic agent for the destruction of neoplasms, a use which it shares with radium, another wonderful material discovered and isolated by the Curies in 1898 after Becquerel had called attention to the great penetrating power of uranium. Radium is even more dangerous than the X-ray in the inability to restrict its destructive action to malignant tissues without injury to the normal structures.

Operations on the skull, trephining, were evidently performed in ancient times, perhaps ten thousand years ago, as shown by the skulls found in Western Europe, Bolivia, Peru, Mexico and Central America. The advances in brain surgery are chiefly in methods leading to more accurate diagnosis and improved technic with suitable instruments, as the osteoplastic flap made with the Hudson trephine, Gigli wire saw and DeVilbiss forceps. In diagnosis, ventriculography, pneumatic, by skull or spinal puncture and X-ray; Queckenstedt's test for obstruction of the spinal canal; Barany's tests; and the more expert use of the ophthalmoscope. Dandy has shown that the right cerebral hemisphere can be removed without causing death or interfering with speech or mentality, only the loss of motion and sensation on the opposite side. He has also removed the choroid plexus from the lateral ventricle for internal hydrocephalus, and has given us another operation for cutting the posterior root of the Gasserian ganglion, by opening the skull in the occipital region and partially dividing the posterior root at the pons. The great reduction in mortality during the last forty years is shown by comparing the statistics of operations on the Gasserian ganglion or its roots. Then, in the hands of the best operators, the mortality was from 10 to 15 per cent; at the present time, under like conditions, it is about 1 per cent.

It is a far cry from Erichsen's opinion that surgery had reached its greatest efficiency some sixty years ago and that of Billroth who said "Let him who expects to retain the respect of his colleagues refrain from touching the human heart," to the present time when you can read in a medical journal a report of 428 cases of operations on the heart.

The ancients believed that a wound of the heart was inevitably fatal, but Paré, in the 16th century, began to doubt it after seeing a soldier, who had received a sword wound in his heart, chase his antagonist some distance before succumbing. However, little or nothing was done in surgery of the heart until the 19th century, after the birth of the great trilogy of surgery, though a few operations had been done on the pericardium to evacuate fluid. It is said that Baron Larrey, of whom Napoleon remarked "He is the most virtuous man I have ever known," tapped the pericardium. In the latter part of the 19th century many experiments on the heart of lower animals were made, especially by Italian and German surgeons, which proved that wounds of the heart in dogs, when sutured or even packed with gauze, were not always fatal. Finally, in 1896, Farina, of Rome, sutured a stab wound of the right ventricle of the human heart and the patient died on the sixth day, but from pneumonia, living long enough to indicate success as far as the operation on the heart was concerned. The same year Cappelen sutured a wound of the left ventricle, with death from pericarditis three days later. In 1908 I collected the histories of 150 patients in whom the heart had been sutured for penetrating wounds—with a mortality of 65 per cent. In the last twenty-five years many other tables of operations on the heart have been published with a smaller mortality, which may be explained by including wounds not penetrating the cavities of the heart, and even in some cases, wounds of the pericardium only, whereas, in my table, only penetrating wounds requiring suture were included. Probably a mortality of about 50 per cent would be right now. Naturally, the size of the wound in the heart and the time elapsing before operation would be the two most important factors in spelling success or failure. Pyopericardium, in spite of operation, has given a high mortality and the resulting adhesions, in cases of recovery, frequently disable the heart to such an extent as to require other operations, as Delorme's cardiolysis, separating the layers of the adherent pericardium, or Brauer's and Petersen's resection of the costal cartilages over the heart, thus reducing the pull on the chest wall. In 1913 Sauerbruch resected a portion of the pericardium and since then this operation, pericardiectomy, has grown in popularity, with some very good results. It has been found possible to remove almost or quite the entire parietal pericardium with advantage to the patient. Some animals do not have a pericardium anyway.

Surgery of the large blood vessels has developed remarkably, as in the treatment of aneurysms, the anastomoses, and substitution of one vessel for another or one part of a vessel to take the place of a removed segment, and the removal of clots by embolectomy. The vena cava inferior has been ligated completely in nineteen cases with six deaths (Pfaff), and it has been proved that ligation of the aorta does not necessarily cause death, one patient living more than two years after such an operation and dying of another disease.

Surgery of the trachea and lungs. On these organs the progress of surgery has been remarkable. Tracheotomy for the removal of foreign bodies or for obstruction in the larynx, trachea or bronchial tubes, is an old operation, but the invention of instruments and the acquisition of the skill to use them and avoid a cutting operation is a development of the last half century with which the names of Bouchut, Killian, O'Dwyer, Coolidge and Jackson are intimately connected. Seeing children suffocate from diphtheritic exudate, in spite of tracheotomy, which was probably done as a last resort, prompted Joseph O'Dwyer to invent a tube to fit in the larynx and trachea, the early use of which caused no objection as there was no cutting. This was well enough for cases of stenosis, but what of foreign bodies which often lodged in the trachea and bronchial tubes and remained fast in spite of efforts to expel them by turning the patient upside down, beating him in the back, and even tracheotomy followed by blind groping in the trachea with forceps? In 1898 Coolidge used a urethroscope through an opening in the trachea and reflected sunlight from a head mirror to remove a piece of hard rubber tubing from the right bronchus of a patient (Jackson). About 1904 a distally lighted bronchoscope was invented, and soon the

beneficent effects of the use of this instrument, especially due to the teaching and practice of Chevalier Jackson, were, and are still being seen in the removal of foreign bodies from the air and digestive passages, in the suction of viscid mucus from the bronchi in atelectasis and the first stage of pneumonia, and especially in making the diagnosis of neoplasms and inflammatory conditions. In fact, according to Jackson, "Today only about 2 per cent of endoscopies are done for foreign body, the other 98 per cent being for the diagnosis or treatment of disease." It is impossible to estimate the number of patients who have been cured or relieved by the use of the bronchoscope or œsophagoscope in the hands of a skilful physician. It is perhaps not an exaggeration to say that it is the greatest surgical procedure which has been developed during the last twenty-five years.

Great advance is seen in the surgery of the lung, such as selecting the best method of drainage in empyema of the pleura and the best method of obliterating a lung cavity or a chronic suppurating pleural cavity, whether by artificial pneumothorax, pneumolysis, excision of ribs or of the phrenic nerve; the removal of foreign bodies and tumors from the lung; and the surgical treatment of bronchiectasis, tuberculosis and gangrene of the lung. Portions of the lung had been removed for tuberculosis many years ago, but with a prohibitive mortality. However, during the last twenty-five years, owing to the work of Lilienthal, Graham, Whittemore, Archibald and others, lobectomy, the removal of an entire lobe for bronchiectasis, tuberculosis, gangrene or malignant neoplasm has come into good standing as a surgical operation in certain cases. The mortality is high, about 50 per cent, and the prognosis is much more favorable in young persons. The use of the Melzer-Auer, or endotracheal method, of anesthesia, enabling one to control the pressure in the lungs, has contributed largely to the success of such operations.

A few words about abdominal surgery, so aptly called the playground of the surgeon, a specialty which has developed chiefly within the last fifty years. Some scattering operations were done previous to this time, but wounds of the abdomen, gunshot and stab, were rarely operated upon. Appendicitis and gall-bladder diseases were almost unrecognized. The recognition and treatment of appendicitis are due almost entirely to the work of American surgeons, among whom the names of Fitz, Park, Buck, Sands, McBurney, McArthur, Morton and Deaver must be mentioned as most prominent in convincing the profession of the frequency and importance of this disease.

Bobbs, in 1868, removed fifty stones from the gall-bladder successfully, and in 1868 Marion Sims, by a similar operation, removed sixty stones. Langerbüch, in 1882, removed the gall bladder. Previous to 1900 such operations were followed by a high mortality—Courvoisier 40 per cent, Eve 40 per cent, and Schuller 56 per cent. After 1900 the mortality fell rapidly to from 1 to 6 per cent in the hands of Mayo-Robson, Tait, Greig, Smith, Kehr, and the Mayos.

The first complete gastrectomy was done in 1883, unsuccessfully, by Phineas Conner. In 1897, Schlatter did the first successful complete gastrectomy, his patient living thirteen months without a stomach and dying from recurrence of the disease. The mortality in something like a hundred cases is about 50 per cent.

In the last century operations for hernia were rarely done except for strangulation when it was usually too late to do any good. Some operations were performed for radical cure, removing the testicle on that side. This operation, naturally, never became popular. In the evolution of the operation, the next step was to devise some method which would cure the hernia and not injure the spermatic cord. Among the pioneers in devising such an operation must be mentioned the name of Dr. Henry O. Marcy, a former U. S. Army surgeon. His object was to restore the tissues of the inguinal region as nearly as possible to their normal condition by eliminating the sac and restoring the natural obliquity of the inguinal canal by uniting the structures behind the cord up to the internal ring, reducing its size to normal, and those in front of the cord from above downward, reducing the external ring to the proper size. He used kangaroo tendon introduced by means of a special needle with the eye near the point and in the form of the shoemaker's stitch. I learned this operation from Dr. Marcy in 1889. In 1894 I visited Dr. Bassini, in Padua, Italy, and saw him perform his operation for the cure of hernia. He used silk, not catgut or kangaroo tendon, or the shoemaker stitch,

but the principle and object were the same, namely the restoration of the normal obliquity of the inguinal canal with reduction of the size of the rings and safeguarding the spermatic cord, as those of Dr. Marcy. An attempt to explain Dr. Marcy's method to him did not succeed in exciting his interest. The thousands of operations for the cure of inguinal hernia that are done today are all based on the same principles as those of Marcy and Bassini, whether catgut, silk, kangaroo tendon, or auto-graft fascia sutures are used, along with some unimportant modification.

Many other notable improvements in surgery deserve mention, such as splenectomy for certain blood diseases; operations for acute pancreatitis; the great variety of plastic operations on the skin, bones, joints and viscera; the success in uretero-colonic implantation; the treatment of syphilis since Schaudinn's discovery of the treponema in 1905, the Wassermann test in 1906, and Ehrlich's discovery of 606 in 1910; the prompt surgical treatment of intestinal obstruction, of gunshot and other wounds and diseases of the abdomen; and the surgery of the prostate gland, including the recent second revival, with many improvements, of the Bottini-Freudenberg operation of many years ago, no doubt a very useful and life-saving operation in certain selected patients. The operation is now done under vision and the obstructing portions of the prostate are gradually shaved away, using the electric cautery for hemostasis.

Only an imperfect sketch of the numerous advances in surgery that have been made in the last forty years has been given. It may well be said that by far the greatest number of discoveries and improvements which have contributed so largely to the science and art of surgery have been made within the last one hundred years. What of the future? When we recall the prophecies of Billroth and Erichsen and see how far they have missed fulfillment, and realize the triumphs of physics and chemistry, as in the telegraph, the X-ray, the radio and the flying machine, who would dare to predict the limits of the surgery of the next one hundred years?

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CALCIUM—ITS METABOLISM AND DEFICIENCY AS A RHINOLOGICAL AND OTOLARYNGOLOGICAL PROBLEM.*

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Medicine as an art has been drifting, slowly, but surely towards preventive medicine. The last decade has evidenced this by prophylactic sera and public health endeavors. Today we are being recalled to an elemental study of biochemistry, especially blood chemistry, as a new phase of preventive effort. This study seems fundamental, in so far as it is directed towards the medium of interchange between the blood and the cell itself. Its point of attack is the cellular interspaces, and while our knowledge is relatively scant, the recent detailed study of the chemistry of the blood and its clinical application promises much.

The pendulum of medical practice swings from extreme to extreme, and only time and disillusionments result in a rational and conservative determination of true values. From radical surgery in rhinology and otolaryngology we seem to be seeking a more sane position somewhere between radical surgery and conservative medicine. Our specialty is considered a branch of surgery, but it might better be conceived of as a hybrid, largely dependent upon internal medicine for its existence and a full realization of its fruits.

Fortunate or unfortunate as it may be, it is a far cry from the old family physician to the highly specialized otolaryngologist. The mean results of these extremes, however, bids fair to produce an especially trained surgical internist, far more desirable than either of the predecessors. The ophthalmologist or otolaryngologist who limits his thoughts and studies to these organs of special sense alone

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bids fair to be hopelessly left behind and few will there be who mourn his passing. There are few diseases of the eye which are not symptoms of diseases elsewhere, and, though less so, the ear, nose and throat are also frequently dependent upon dysfunctions of remote organs.

Cellular chemistry presents a challenge to every one of us to adapt ourselves to this modern trend and give our patients the benefit of medical consideration, as well as surgical interpretation. The conservative methods might well be tried, where indicated, and only when failure occurs should surgery be undertaken. When to operate is surgery's greatest problem and it should be more to our credit to conservatively cure than to cut.

With these few remarks in mind, I have chosen to review with you, in the light of recent literature, the study of calcium. It is evidently impossible to catalogue all that is of value in our literature on therapy. From culling the literature, I have chosen to limit my remarks to the early cases of calcium deficiency. If, by focussing your attention on these cases, some further light can be shed so as to recognize them before the gross changes of tetany, osteomalacia, celiac diseases, etc., have developed, then my efforts will have been well worth while. My choice and its presentation are the personal elements, and for its shortcomings I beg your indulgence.

Calcium, a mineral element, is found in the normal body in the form of its salts, the phospates and the carbonates. It is absorbed as such from the upper portion of the intestinal tract and carried by the blood serum to be utilized by the tissues or deposited in the skeletal structures. This latter store-house for calcium is analogous to the liver's function in relation to glycogen.

This absorption of the calcium salts from the intestinal tract is dependent upon many factors, the more important of which will be discussed briefly:

1. Hydrogen ion concentration in the intestinal tract is lower, or acid, in its upper portion, due to the hydrochloric acid from the stomach. It gradually becomes more alkaline, the hydrogen ions concentration being higher towards its lower portions. Solubility is necessary for absorption and the calcium salts are highly soluble in acids, but relatively insoluble in alkaline media. It is evident, then, that a factor such as achylia gastrica, which diminishes materially the acidity of the intestines, diminishes also the absorption of calcium.

2. Phosphates, which are soluble in an alkaline medium, are absorbed chiefly from the lower intestine. If they are in the upper intestines in larger proportions than calcium, the latter may be precipitated as the insoluble tertiary calcium phosphates.

3. Fatty acids are the result of fat metabolism, and these unite with calcium salts to form the insoluble soaps, which are excreted as such. Large amounts of fat in the upper intestinal tract markedly diminish calcium absorption. Such fatty stools are readily noted in sprue, celiac disease and jaundice.

4. Vitamin D and sunshine, antirachitic factors, increase the calcium level of the blood serum. Whether this is the result of aid in calcium absorption from the intestinal tract, some intermediary metabolism of calcium and phosphorus, or as Taylor, Sykes and others from Toronto have recently advanced experimental data to show, raise the blood calcium by withdrawing it from its store-house, the skeleton, is a mooted question. If the latter is the case, it is highly improbable that viosterol is of value in increasing the calcium supply, unless it is only assimilable after having been stored and then withdrawn.

5. Parathyroid activity is an important factor in calcium metabolism, increasing the level in direct ratio to its secretion. After parathyroidectomy, hypocalcium becomes extreme and tetany with the other more severe manifestations results.

By blood calcium, we mean the amount of calcium in the serum element. The normal for this is generally accepted as 9 to 11 milligrams per 100 c.c. of blood. Serum calcium is considered as containing 4.5 to 5.5 mg. per 100 c.c. of diffusible calcium, or that portion which is in such a form as to pass readily through a parchment membrane. This property of diffusibility makes it usable as it passes readily through the capillary or cell walls. The remaining 4.7 to 5.75 mg. of the serum calcium per 100 c.c. of blood is non-diffusible and probably inert. About 2 mg. of the diffusible fraction is in form of calcium ions, which is the form which produces pharmacological action. This ionic calcium varies inversely as the phosphate and carbonate ions, and directly as the hydrogen ions.

The normal adult is in a state of calcium equilibrum, but, by dietary and metabolic alterations, a positive level or hypercalcemia, or a negative level or hypocalcemia may be developed. Hypercalcemia seldom, if ever, occurs clinically, but hypocalcemia

is probably much more prevalent than formally believed.

Calcium exerts a profound effect upon tissue by lessening the permeability of the cell membrane. This is probably responsible for the beneficial effect in diseases where edema predominates. Vascular tone and cell nutrition is improved, thus establishing its value in chronic debilitating diseases, especially tuberculosis. The coagulation time of the blood may be decreased by the proper administration of calcium over a period of time. A soluble, non-irritating salt should be administered one-half hour before meals where the intestinal acidity is highest.

A. E. Wright found that the local edema following injection of virulent vaccine could be checked by injections of calcium chloride. It has been more recently demonstrated by Herman and Zentner that tissue susceptibility to inflammation varied inversely to the diffusible calcium in the blood. This lessened susceptibility is probably affected by (1) increased motility and numbers of leukocytes; (2) decreased permeability of the blood vessels and lining membrane; (3) diminished sensibility of the sympathetic and parasympathetic nervous system.

The estimation of the blood calcium is of value, but chiefly so when determined in the light of ionic or diffusible calcium. It is highly probable that the usable form of calcium is often low, and tissue starvation exists even when the whole serum calcium is well within limits of normal. Any determination of blood calcium below 9 mgs. per 100 c.c. of blood should be considered low.

Calcium may be found deficient in many mild alterations of cellular function before the symptoms of profound hypocalcemia, such as tetany and osteomalacia are noted.

In the eye, especially in phlyctenular conjunctivitis or keratoconjunctivitis, calcium is often found deficient in the blood. The duration and frequency of recurrences in these conditions are apparently diminished, as shown by Colmer. F. P. Fischer demonstrated a striking clearing of the vitreous and improvement of vision with large doses of calcium. Uveitis and lesions due to hypersensitiveness are benefited by its use in some cases. Relief of pain, absorption of exudates, diminution of frequency of recurrences and shortening the inflammatory course in these conditions seem to be its virtues. Its use intravenously in acute vitreous hemorrhage, recurrent retinal hemorrhages and one case of post-operative iris hemorrhage has met with immediate arrest in my hands.

It is probably in rhinology and otolaryngology that we see the most beneficial effects from calcium therapy. The nose and throat are frequently the points of weakness at which mild or severe hypocalcemia causes frank cellular dysfunctions of great variations, which make their accurate classification and symptom correlation very difficult. Sherman emphasizes the fact that on insufficient calcium intake the child may develop in weight and height, apparently normally, but ossification of the bones is not sufficiently dense to act as an adequate storehouse supply in adult life. He thinks that a number of weaknesses or susceptibilities are the result of calcium deficiency. Some people may respond to this deficiency, at any age, by frank disease at some point of least resistance or may be just below par.

Symptoms

Susceptibility to colds with a history of one following another during the winter or even continuous colds should lead us to suspect calcium deficiency. These patients are frequently affected even in warm weather upon the slightest exposure. People who are housed up and seldom get sunshine and fresh air seem prone to hypocalcemia. The history of a diet poor in calcium, or with little milk or cheese, should point to this condition. A history of lassitude and lack of endurance in children and young adults is a frequent occurrence and is associated with loss of muscle tone, poor posture and often myopia. Their mentality may be sluggish and school-work is difficult, being accompanied by indifference on the part of the child and many complaints from the teacher.

The patient may be of normal weight and appearance, but is usually rather sallow and pale. Mouth breathing is frequently present, although the tonsils and adenoids have usually been removed, but without relief of the obstructive symptoms complained of. They may be even more susceptible to colds after the tonsillectomy, and the lateral pharynx may be swollen and velvety red. On inspection of the nose, we see bridges of mucus and the mucosa pale and thickened. A fairly constant finding is edema about the anterior and posterior

tips of the middle turbinate, with no frank sinus lesion. With this picture, symptoms of sneezing to frank allergic rhinitis are often associated. The discharge may vary from watery or sticky mucus to a purulent discharge, depending on any accompanying sinus infection. This discharge is not profuse in uncomplicated cases, and most of it goes post-nasally.

Post-nasal drippage and chronic pharyngitis, with bronchitis, tracheitis and a bubbling cough may be associated with the above picture, but are most often associated with graver changes in the nose or sinuses above.

Soft teeth which hold their fillings poorly and decay easily, tingling and numbness of the extremities, which "go to sleep" easily, are other indicative signs and symptoms.

Enough details have been enumerated here to point out that, while a fairly clear syndrome may occur, it is often obscured by accompanying lesions which befog the picture of calcium deficiency. Probably the first symptoms are increased susceptibility to infections, decreased cellular secretion and edema of the mucosal surfaces. These may readily be important etiological factors in purulent sinus infections.

TREATMENT

In considering treatment of calcium deficiency, one naturally thinks of food, the natural source. Sherman considers 0.45 grams of calcium per day the actual body requirement, but for safety this minimum for an adult should be increased to at least 0.75 grams.

To meet this requirement, Bernheim believes that foods, thought in the past to be high in calcium, such as green vegetables and fruits, are unsatisfactory because of the great bulk necessary. Also, because much of the calcium is lost in the "pot liquor" resulting from usual cooking methods. She thinks that milk and cheese, four glasses of the former and one-quarter pound of the latter, meet the daily requirements alone as no other sources do.

It must be remembered, however, that no matter how great the amount of calcium taken in, if it cannot be absorbed and assimilated, a deficiency will result. Therefore, any method to increase the acidity of upper intestinal tract may be of service, and with this in mind any calcium salts given to supplement the diet should be given one-half hour before meals while the stomach is empty.

There are many forms of calcium on the market, a few of the best being the gluconate, dicalcium phosphate, the lactate and the chloride. To immediately raise the blood calcium level for such acute conditions as hay fever, asthma and eczemas, the intravenous or intra-muscular use of calcium is of value. Its effect on the blood calcium is very transient however. The gluconate is probably the most desirable salt for this use, as the chloride causes tissue destruction in case of leakage from vein or intra-muscular injections. I have seen two very serious ulcers for the careful use of the chloride before the gluconate was available.

Excessive fats and phosphates should be avoided in the diet. Lactose has a favorable effect on calcium absorption and may be added to the diet.

Of all the factors which affect calcium absorption, vitamin D in the form of viosterol, or supported cod liver oil, sunshine and parathyroid extract are the most valuable. They should be used freely, together or separately, as the case may require.

In conclusion, I wish to say that in children the calcium level should be kept positive by dietary or other methods, for in this way we probably have one method of combating susceptibility to diseases which are prone to lead to infections of the paranasal sinuses.

THE MANAGEMENT OF DIABETIC PATIENTS IN PRIVATE PRACTICE.*

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Diabetes is an important disease. Two per cent of all people die with diabetes. Among 2,611 deaths in Richmond in 1932, fifty-five were caused by diabetes, the eighth most frequent cause of death. There probably are three or four diabetics among each 1,000 people in the total population. This means

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that in Virginia there are about 8,000 diabetic patients. The incidence of diabetes is increasing, probably for three reasons. We make urine and blood tests more frequently now than we did in years gone by. Thus we detect diabetes in many cases that otherwise would have been overlooked. A second reason for the increased incidence is that the diabetics, especially the children, are living year after year; whereas prior to insulin, they died within a short time. A third reason is the increasing longevity[1] of the general population, due in part to the falling death rate from tuberculosis.[2] With a greater number of elderly people, the incidence of diabetes increases, because diabetes is a disease which manifests itself more often in the older individuals. It becomes obvious that diabetes is an important problem, and that it behooves us to detect it and to treat it well.

The cause of diabetes is unknown. Heredity seems of real importance,[3] but we must not be content with such an explanation. We must know the mechanism of production so that we may endeavor to control the disease. The obese elderly person and the tall, thin child are more apt to develop diabetes than others. Although Jews are very susceptible to this disease, it rarely ever occurs in a thin Jewish adult. The influence of the thyroid, pituitary, and adrenal glands is not adequately understood. Nor is diabetes always associated with an obviously diseased pancreas.

For the diagnosis of diabetes, a blood sugar test is almost essential, because about 10 per cent of all cases with sugar in the urine are not true diabetics. Glycosuria combined with a blood sugar value above 164 mg. after meals or above 134 mg. before breakfast is evidence of true diabetes,[4] although there are a few exceptions to this. If a patient has thirst, hunger, polyuria, loss of weight, weakness, or stubborn or frequent infections, diabetes is usually suspected; but there are other syndromes that are also significant. An elderly person who has pain or paresthesia in the legs at night or muscular weakness of the legs deserves blood and urine tests. So does a person with precocious arteriosclerosis. Very often there are no symptoms, and this indicates the need of routine urinalysis on all persons coming to the doctor. I believe this is particularly true for the dermatologist. Insurance examinations have revealed many an unsuspected case of diabetes. Dr. Tudor,[5] of Norton, recently made an eloquent plea for a careful search by each doctor for diabetes among his patients.

The prognosis in well-treated diabetics is very good, although diabetes is rarely if ever cured. Such children are growing and developing normally and are leading lives comparable to those of non-diabetics. They attain maturity, follow various professions (although, because of the danger of tuberculosis, nursing seems inadvisable), and raise families of their own. With the recent methods of treatment, the elderly diabetic often continues his usual activities, and many of them outlive their life expectancy. In recent weeks, I heard a doctor state that a diabetic child should be allowed to die, because she could never lead a useful or satisfactory existence. He maintained that the diabetic regime prevented a contented life. In answer, I may say that the diabetic child and the family and friends disagree heartily with him. It is a deplorable fact that occasionally such a gloomy view is held. I believe it is provoked by ignorance of the condition and life of the well-treated diabetic of today.

Successful treatment demands unflagging attention to detail. Leave nothing to conjecture. When upsets occur, gather the necessary data and from them determine the proper treatment. Tell the patient in detail what to do and when and how to do it.

Diabetes mellitus is a condition in which food is not adequately utilized. Two cardinal dietary principles are that *a diabetic must not consume too many calories* and that *he must eat no sweets.* A third rule is necessary for insulin patients particularly, and it is that *a diabetic eat a definite mount and only at regular intervals.* Treatment in the past was based on the belief that the diabetic could metabolize all food other than carbohydrate. The sweet and starchy foods were eliminated from the diet, and fat prescribed in unlimited amounts. Then Allen found that the total amount of food was very important, and the under-nutrition principle of treatment was evolved. This principle is used whether the diet is low or high in carbohydrate. It must not be ignored. Then insulin was discovered, and this changed the treatment to some extent, and results of treatment to an even greater extent, notably in children. However, although the mortality from coma decreased, the mortality from arteriosclerosis increased. This was attributed in part to the high fat

content and low carbohydrate content of the diet. Since then, the ratio of carbohydrate to fat has steadily increased until at present the number of grams of carbohydrate nearly always exceeds the grams of fat. A suitable ratio in grams of carbohydrate to fat is about 3 to 2. The effect of this change of diet on the arteries is still not entirely clear; but it seems that the arteriosclerosis is not so great as formerly, certainly less frequent in children. Moreover, the patients are better satisfied with the diet and do not suffer so much from languor and lassitude. An average diet for an elderly diabetic is composed of carbohydrate 140 to 150 g., protein 70 g., and fat 90 to 100 g., depending on the state of nutrition and activity of the patient and his response to the diet. The caloric intake should be adjusted to the nutrition and activity of the patient. Patients more than thirty-five years old should be about 5 per cent under-weight; those under thirty-five years about 5 per cent over-weight.

First establish the diagnosis, and then initiate treatment. If a patient knows nothing of the treatment which he must have, admit him to a hospital for regulation of his disease and instruction in its management. Keep low his hospital bill by making each day count. Have him study, and study him It is the intelligent and well-trained diabetic who leads the healthiest and most nearly normal life. He should be taught something about foods and the dietary substitutions allowed. He should be able to inject insulin if this is needed. He should learn to test his urine and to recognize the indications of trouble. It is essential that a diabetic know when to see his doctor and what to do until the doctor arrives. He should know how to live so as to deviate least from the normal path.

There are basic food substances which nearly everyone needs. We usually provide for this by supplying a skeletal diet to which we may add as the needs of the patient become manifest. Such a diet follows:

BREAKFAST

Grapefruit, ½ (200 g.)
Bread, ½ slice (15 g.)
Cooked oatmeal, ½ cup (15 g. dry)
Egg, 1
Bacon, 2 long strips (15 g.)
Butter, ½ pat (5 g.)
20% cream, 4 oz. (120 g.)
Coffee

LUNCH

Consommé
Meat, small serving or 2 oz. (60 g.)
5% vegetable, large serving (150 g.)
10% vegetable, moderate serving (75 g.)
Potato, size of egg (60 g.)
Butter, 1 pat (10 g.)
Orange, 1 medium (100 g.)
Tea or coffee

SUPPER

Meat, small serving or 2 oz. (60 g.)
5% vegetable large serving (150 g.)
10% vegetable, moderate, serving (75 g.)
Bread, ½ slice (15 g.)
Butter, 1 pat (10 g.)
Orange, 1 (100 g.)
Milk, 6 oz. (180 g.)

This diet contains carbohydrate 103 g., protein 66 g., fat 86 g.

There are two types of diabetics, one who receives no insulin and one who takes insulin. In general, if a diabetic is loaded with sugar and is in a hospital, I give him insulin until his sugar has been properly reduced. If he remains free of sugar on an adequate diet without insulin, insulin is not continued. Otherwise, he should continue insulin as long as it is needed to assure the utilization of sufficient food.

After the sugar has been reduced, the diet may be increased daily or every two to four days, depending on the number of days in which the patient will remain under close supervision. One slice of bread (1 oz. or 30 g.) may first be added, then a small potato (60 g.), then another orange (100 g.) or a comparable amount of some other fruit; next ½ pat of butter (5 g.), and finally two ounces of milk. This final diet contains carbohydrate 146 g., protein 73 g., and fat 92 g., a total of 1,704 calories, which is adequate for many diabetics. Further additions may be made in a similar manner. Various cereals, fruits, meats and vegetables should be used when possible. Substitutions, such as fish or cheese for meat, potato for bread, and cereal for bread, may be made in the proper amounts. One must, of course, provide some extra butter if fish be given for meat, because many fish contain no fat. Similarly with other substitutions. A table giving the composition of various foods is almost essential in this work. I cannot emphasize too strongly that when we mention some food, we mean that food alone. When we say cabbage, we mean nothing but cabbage.

We do not mean cabbage cooked with extra meat. When we say an egg, we mean just that and not an egg fried in extra grease. If one wishes a fried egg, he must use part of the allotted butter for frying the egg; or, if he prefers, he can use mineral oil. If one wishes salad dressing, he must decrease his diet accordingly or else make mayonnaise with mineral oil. The "extras" of a meal are often to blame for a gain in weight or an uncontrolled diabetes. Condiments are used as they are by non-diabetics. The diabetic fluids without food value include water, tea, coffee, cocoa shells, and clear broth. It seems to me that few people could complain of the diet outlined above. It resembles the diet of a normal person in almost every respect except that it contains no sweets, i. e., sugar and allied substances. It satisfies the appetite. It can be easily obtained at home, at restaurants, or at the residences of one's friends. A diabetic should not form the habit of using saccharine. Six half grain saccharine tablets daily are not apt to harm the patient directly; but this causes a persistence of the desire for sweets and may lead to dietary indiscretions. It is the doctor's duty not only to prescribe the diet, but also to induce the patient to adhere to it.

Naturally any diet must be adapted to the patient's needs. A peptic ulcer requires a modification of the diet, as do certain other diseases. We should endeavor to maintain the stated proportion of carbohydrate, protein, and fat; and we should make sure that the diet is not deficient in the elements needed for a normal existence.

Insulin is used in many cases. It enables a doctor to effect a rapid reduction of the sugar so as to shorten the duration of hospital treatment. It tides certain patients over a period when infection or enforced inactivity causes a disturbance of the diabetes. It maintains life and health in patients who, without it, would die or remain at least partially incapacitated. It is a useful and potent substance that should be used properly. One must know its limitations as well as its uses.

When initiating insulin therapy, one should remember that a too rapid, as well as a too great, lowering of the blood sugar may be harmful. Especially is this true in the cases with hypertension or arteriosclerosis. An abrupt vascular accident, such as coronary thrombosis or apoplexy, may be associated with too vigorous treatment of the diabetes. In the absence of acidosis, an initial dose of five units of insulin is ample. See the effect of that before increasing the dosage. Observe the patient carefully and make frequent tests of the urine and blood sugar at different times during the day. In the hospital all urine should be saved and tested. Even in the home this procedure is practical. Determine each day the effect of treatment of the preceding day.

The following charts illustrate the course of treatment in several cases. They show the faults as well as the virtues of this treatment.

The first case, No. 3, is that of an old man who had had diabetes for thirteen years and angina pectoris for six years. He had never taken insulin.

CASE NO. 3—70 YEARS OLD—ANGINA PECTORIS. WT., 70 KG.

Date	*Urine Sugar*	*Blood Sugar mg. per 100 cc.*	*C g.*	*P g.*	*F g.*	*Cal.*	*Insulin*
8	7%	267	83	57	71	1199	None
9	4%		98	60	72	1280	None
10	1.3%		120	67	96	1612	None
15	0.7%						None
16	0		132	69	96	1668	None
20	1.3%	183	150	72	96	1752	None
24	0						None

The second case, No. 6, is that of an old lady who has had diabetes for fourteen years. She was sent to me because dietary measures proved to be inadequate during the course of an otitis media.

(She had been advised to take 1 orange or 4 oz. of ginger ale at bedtime; but she had discontinued this prior to the reaction.)

The third case, No. 9, is that of an elderly lady of 58 years whose diabetes became upset when an infected callus appeared on the toe. She had had diabetes for nine years, and had never taken insulin.

(The urine is recorded in four samples which are collected separately to indicate the amount of sugar excreted after each meal and during the night. The

first specimen is from breakfast to lunch, the second lunch to supper, the third supper to bedtime, and the fourth from bedtime to breakfast. This 4-period test is very useful in determining the proper distribution of insulin.)

CASE NO. 6—73 YEARS OLD—HYPERTENSION, ARTERIOSCLEROSIS. WEIGHT 50 KG.

Date	*Urine Sugar*	*Blood Sugar*	*C*	*P*	*F*	*Cal.*	*Insulin*
31	2.3%	381—Noon					None
1	29 gm.	222—9 P. M.	121	57	73	1369	0-4-4
2	20	308—Noon	125	56	81	1461	6-0-5
3	19		135	58	83	1527	8-0-5
4	8	333—Noon					10-0-10
5		221—Fasting					12-0-10
6	11	286—Noon					Same
9	3						Same
11	3	240—Noon					Same
16	0	118—Insulin reaction—2 A. M.					8-0-5

(Blood taken 20 minutes after orange had been eaten)

After the sugar has been adequately reduced and the diet and the required amount of insulin determined, one should endeavor to see that the insulin dosage is properly distributed. Usually, if the daily dose does not exceed 10 units, the total amount is injected before breakfast. If two doses are required to maintain the blood sugar within the normal range, one dose is given before breakfast and one before supper, the breakfast dose being slightly larger than the other. If a third dose is necessary, about 2 to 6 units are given at bedtime. Rarely is it necessary to give a third dose at noon. The noon dose is inconvenient. The patient is then apt to be at work or at school. Furthermore, the action of insulin persists for about eight hours, so that the breakfast dose usually cares for the noon meal also. The injection of the same dose before each meal is often inadequate and even harmful. The morning blood sugar may be very high, and yet the repetition at noon and supper of the morning dose may give rise to an insulin reaction in the late afternoon or night. This mistake is often made. Rarely, four doses of insulin are needed daily. In such case the breakfast dose is the largest, the supper next, the noon next, and the bedtime dose is the smallest. With a total dosage of 51 units the distribution would be approximately this, 20-10-15-6. Insulin is given subcutaneously about twenty minutes before meals.

It is well to outline on the antero-lateral aspect of the thighs a diagram for the injection sites.[6] The use of one small patch of skin daily for a long period causes thickening and scarring of the tissue. This is not only unsightly but may interfere with the absorption of insulin or contribute to infection. Patients should boil the syringe and needle each time; but an alcohol container, in which the syringe and needle are kept, is permissible during trips from home. In this case, boiling twice a week is advisable.

CASE NO. 9—58 YEARS OLD—HYPERTENSION AND ARTERIOSCLEROSIS. WEIGHT 65 KG.

Date	*Urine Sugar*	*Blood Sugar*	*C*	*P*	*F*	*Cal.*	*Insulin*
9 (office)	4+	280—Noon	91	60	83	1351	0
14 (hospital)	4+ -0-0-0	240—Noon	120	70	90	1570	0-3-3
15	0-0-0-0	274—Noon					5-0-5
16	0-1%-.5%-0	280—Noon	130	70	90	1610	8-0-8
17	0-0-0-0		140	70	90	1650	12-0-8
18	0-0-0-0	198—Noon					

The danger of insulin reactions must not be overlooked. The most frequent time for them is about four hours after the insulin has been injected, but occasionally the reaction is much delayed. In young people they are not so dangerous, but in people with arteriosclerosis even one reaction is to be avoided carefully. Death has occurred during hypoglycemia. One must also consider the danger of a reaction in certain lines of activity. Swimming, automobile driving, working on a roof, etc., are dangerous when one has a reaction. He may drown or have some other unlooked for accident because he has lost consciousness or judgment. Different situations, such as vomiting or exercise, increase the chances of hypoglycemia. Don't forget that in coma or infection the need for insulin may decrease rapidly. To avoid

insulin reactions, we must be alert to reduce the insulin promptly when necessary. The reactions appear abruptly within a few minutes or less. The usual symptoms are hunger, sweating, trembling, weakness, and emotional instability. When anything unusual happens to a diabetic, make the needed tests and act accordingly. Insulin reactions almost always respond within a few minutes to the administration of orange juice or sugar. The insulin patient takes two precautions to avoid trouble. He always has at hand sugar or fruit. It is by his bed at night and in his pocket in the day. He is never without it. He also carries an identification card stating his name, his address, his disease, and the fact that he takes insulin. If he is found unconscious, his card requests that the nearest doctor be called and that consideration be given to the question of insulin shock and diabetic coma. After the immediate treatment of the reaction, one must seek the cause and so regulate the diabetes that recurrences do not occur.

After diet and insulin, comes exercise. Exercise keeps the patient in good condition and helps to lower the blood sugar. Many patients learn the value of exercise. One man found that a game of golf enabled him to reduce his insulin five units.[4] A set of tennis may replace many units of insulin. A reduction of the preceding dose of insulin or the addition of about ten grains carbohydrate is advisable before unusual exercise.

One must learn to juggle the distribution of the insulin and the diet to help ward off insulin reactions and to counteract the effect of exercise. It may be necessary to give the breakfast fruit at 10:30 or 11:00 in the morning so that the blood sugar does not fall below normal.

The final measure in the control of the diabetes is to care for the general condition of the patient. Infection and inactivity increase the need for insulin. Then let us try to prevent infection and sickness. The diabetic should keep clean. A boil may induce diabetic coma. He should keep his skin and mouth clean, treat his epidermophytosis, trim his nails properly, attend to corns and calluses and ingrowing nails. Electric pads and hot water bottles are looked on with disfavor. Strong antiseptics, such as iodine, are equally as dangerous. Emphasis on these apparently trivial matters may prevent gangrene or coma. Above all, impress the diabetic with the importance of attending promptly to any ailment, no matter how slight.

You may have noticed that I neglected to discuss the diabetic child and diabetic coma. The treatment of each is not easy. It requires not only intimate knowledge of the disease and the child, but also abundant time. The control of diabetes in children is a problem that must be studied assiduously, and we lack the time for its discussion. About coma, I should like to say that it demands continuous attention, preferably in a hospital, until all danger has passed and the acidosis is over.

Let me repeat: There are four weapons with which we may combat diabetes. They are *diet, insulin, exercise,* and *care of the patient's general condition;* and if our treatment is successful, he will feel in good condition. Close supervision of a patient is the best insurance available. Coma results from neglect of the diet or insulin, or it may be the result of negligence in promptly investigating and treating an untoward symptom such as infection or vomiting. One cannot always prevent a change in the status of the diabetes, but he can attend to it promptly. Periodic examination is essential and the responsibility for this rests partly on the doctor.

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SODIUM HYDROSULPHITE IN THE TREATMENT OF POISONING BY MERCURIC CHLORIDE.*

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Some eight years ago, after attempting to weigh the evidence as to the value of various measures proposed for the treatment of poisoning by mercuric chloride, the belief was expressed that "antidotes for mercuric chloride must be looked upon as better fitted for affording mental solace to physician and patients rather than as being capable of accomplishing a detoxication of the poison."[3] Calcium sulphide,[4] albumin,[2] sodium thiosulphate,[6] bismuth subnitrate, acacia, and magnesium sulphate:[8] all of these have been found of no practical value when tried under properly controlled conditions.

In 1925, Hesse[7] reported that sodium hydrosulphite, $Na_2S_2O_4$, was capable of detoxicating mercuric chloride in the gastro-intestinal tract and that the administration of this salt was followed by the recovery of animals after what would have been, otherwise, a fatal dose of the poison. Thus, it was found that eleven of twelve control rabbits died from a dose of 35 mgm. mercuric chloride per kilogram; while of eight animals given this dose of the mercury salt and treated in ten minutes by oral administration of sodium hydrosulphite, 0.2 gram per kilogram, six recovered. Indeed, when there was as great a lapse of time as thirty minutes between administration of the above-stated doses of mercuric chloride and sodium hydrosulphite, three out of a series of five rabbits survived.

So far as we are aware, these results of Hesse's are the most favorable that have been reported prior to that time; disregarding the instances where no satisfactory control observations had been made. However, since Hesse drew his conclusions solely from experiments on rabbits and it has been shown[5] that results following the use of these animals do not always agree with those obtained on dogs, it seemed desirable to attempt confirmation of Hesse's work, substituting dogs as experimental animals.

Hesse abandoned the use of dogs because of the occurrence of emesis almost invariably following administration of the antidote. It has been our experience that emisis may occur from the administration of mercuric chloride alone, even when the animals have previously received large doses of morphine sulphate (20 mgm. per kilogram subcutaneously), but in the cases where this does take place, its occurrence is usually delayed so long after administration of the poison that it seems of little moment. In our first experiments, therefore, carried out in February, 1929, morphine alone was used for premedication; 20 mgm. per kilogram being injected subcutaneously. Eight animals were employed, being paired as nearly as possible as regards weight, approximate age, and general condition. After twenty-four hours, during which the animals were allowed free access to water but received no food, the morphine was injected. When depression was pronounced (in from twenty to thirty minutes), mercuric chloride, in the form of a freshly prepared 1 per cent solution in distilled water, was administered through a rubber tube, connected with a burette and passing into the stomach. Tubing and burette were filled by pressure from below, to insure absence of air bubbles. In these and subsequent experiments, the dose of mercuric chloride was 25 mgm. per kilogram.

Of the eight dogs in this first group, four served as controls and four were given sodium hydrosulphite, in the form of a 10 per cent solution, 100 mgm. per kilogram, exactly six minutes after they had received the mercuric chloride. Three of the treated animals vomited almost immediately after administration of the antidote; two of the controls, likewise, vomited, one within five minutes after the mercury had been given. Three of the controls died within from two to five days; one control and all of the treated animals survived for at least a month, at which time they seemed in excellent condition.

The prompt emesis of the dogs receiving sodium hydrosulphite naturally raises the question whether recovery of these animals was due merely to re-

*The experiments forming the basis for this report were carried out in the Pharmacological Laboratory of the Medical College of Virginia, Richmond, Va.

moval of unabsorbed poison from the stomach by the vomiting. In the next group of eight dogs, therefore, in addition to 20 mgm. of morphine sulphate, 100 mgm. of chloretone per kilogram were injected intraperitoneally. The animals were rather deeply narcotized, and none vomited during a period of one hour following administration of the antidote to the four treated animals. In this group, the time lapse between poison and antidote was thirty minutes. Three of the controls died in from one to two days; one control and two of the treated animals survived the month's period of observation. Of the two treated animals that succumbed, one died in twenty-four hours; the other, on the tenth day.

In the next group, consisting of six dogs, the dose of chloretone was decreased to 50 mgm. per kilogram and the thirty-minute interval allowed to elapse between administration of poison and of antidote. One of the treated animals vomited fifty-five minutes after receiving the hydrosulphite, but succumbed two days later, as did all of the controls and one of the other two treated animals.

In the remaining experiments, dial-urethane solution (containing 10 per cent diallyl-barbituric acid and 40 per cent urethane in aqueous solution) was substituted for chloretone because it is easier to handle and seems to cause little or no local irritation after intraperitoneal injection, the dosage being 0.25 c.c. per kilogram. The time interval between administration of the poison and of the antidote was decreased to fifteen minutes. A total of thirty-two dogs, divided into four groups was used. Two of the control and two of the treated animals vomited; all of these succumbed. The mortality among the sixteen control animals was 100 per cent; that among those receiving the sodium hydrosulphite was 62.5 per cent.

The results we have obtained with dogs confirm, in a measure, those observed by Hesse with rabbits. It is our impression that sodium hydrosulphite is of some value for lessening the toxicity of mercuric chloride in the alimentary canal but that its use by no means renders it possible to dispense with gastric lavage and colonic irrigation; the first of these measures we feel is still the most important in the treatment of poisoning from oral ingestion of mercuric chloride.

The results of all our experiments are summarized in the following table.

Date	Hg Cl. Mg. x Kg.	No. of Controls	No. of Treated	Time Interval Between Poison and Antidote	Mortality Controls %	Mortality Treated %
*2-26-29	25	4	4	6 min.	75	0
†3- 5-29	25	4	4	30 min.	75	50
†3-13-29	25	4	4	30 min.	75	75
†3-19-29	25	3	3	30 min.	100	66
‡4-10-29	25	3	3	15 min.	100	66
‡4-16-29	25	4	4	15 min.	100	50
‡4-25-29	25	4	4	15 min.	100	50
‡5-10-29	25	5	5	15 min.	100	80
Total		31	31		90.3	54.8

*Morphine 20 mgm. per kgm. alone as premedication.
†Morphine, 20 mgm. per kg. and chloretone, 50 or 100 mgm. per kgm. as premedication.
‡Morphine, 50 mgm. per kgm. and dial-urethane solution, 0.25 c.c. per kgm. as premedication.

Fortunately, sodium hydrosulphite may be easily obtained, and, moreover, appears to be non-toxic in the dosage recommended by Hesse.[7] This author finds that as much as a gram per kilogram orally or 0.2 gram per kilogram intravenously may be administered with no serious untoward manifestations in laboratory animals. He states, moreover, that human beings tolerate well single doses of a gram or repeated daily doses of 0.2 gram for as long as a week.

In the treatment of clinical poisoning by mercuric chloride, we suggest thorough gastric lavage, preferably with 1 to 1000 solution of sodium hydrosulphite. Delay in instituting lavage should not occur; if the hydrosulphite is not immediately available, the stomach should first be washed out with plain water, to be followed later by the hydrosulphite solution. Within six to eight hours, the patient should be given 0.25 gram of the salt in gelatin capsule, and a similar dose should be repeated four times daily for at least a week. Fluids should be forced by mouth if possible, by rectum, subcutaneously, or even intravenously if vomiting is pronounced. Gastrice lavage should be repeated on the second and third days; it seems unnecessary to repeat this procedure more often. High colonic irrigation with 1 to 5000 solution of sodium hydrosulphite may be carried out immediately after the first gastric lavage, and the irrigation repeated on the second and third days.

Unfortunately, it is seldom that a patient is subjected to treatment within a half hour after ingestion of mercuric chloride; consequently, one must always reckon with the probability of more or less

absorption of the poison from the alimentary canal. The recent reports by Rosenthal,[9] indicating that dogs may be saved from otherwise fatal doses of mercuric chloride by the intravenous injection of sodium formaldehyde sulphoxylate, are of the greatest interest. Having in mind the statement of Burmeister[1] that "irrecoverable damage to the kidney" may occur as soon as three minutes after oral ingestion of mercuric chloride in massive doses and the failure of Sansum[10] to influence the course of poisoning by any measures employed, once a barely fatal dose of mercuric chloride has been introduced into the blood stream, we must confess to having been definitely pessimistic as regards the "parenteral" treatment of mercury poisoning. The feeling of pessimism was increased, if anything, by the statement of Hesse,[7] who used Rongalit (sodium formaldehyde sulphoxylate) in 1926 by intravenous injection, that "we must say that the problem of parenteral detoxication is still unsolved" (". . . mussen wir sagen, dass das Problem der parentralen Entgiftung offen bleibt"). It is true that this author observed recovery of two out of eight rabbits following sulphoxylate therapy, but his report does not contain details sufficient to warrant conclusions other than those drawn by him. It is to be hoped that Rosenthal's later work, which carries every indication of having been carefully controlled, will be repeated by other investigators in order that the value of sodium formaldehyde sulphoxylate can be definitely established. In the meantime, it seems quite certain that the substance is safe to use; consequently, its clinical employment is to be recommended, in spite of the contradictory statements of Hesse and of Rosenthal regarding its efficacy as an antidote for mercuric chloride. Rosenthal stresses the necessity of using a purified preparation, sealed in ampules, from which a solution is to be prepared immediately before use. He recommends gastric lavage with a 5 per cent solution, to be followed by intravenous injection of 10 grams of the salt in 100 to 200 c.c. of distilled water.

In conclusion, it may be said that the results of Hesse[7] on rabbits, which have been confirmed partly by us on dogs, indicate that sodium hydrosulphite, an easily obtainable salt, is of some value for detoxication of mercuric chloride in the lumen of the alimentary tract. Sodium formaldehyde sulphoxylate, the intravenous injection of which in the treatment of mercuric chloride poisoning was first suggested by Hesse,[7] seems, in the hands of Rosenthal,[9] to possess a high degree of efficacy as an antidote to mercuric chloride; but, in view of Hesse's unsatisfactory results, confirmation of Rosenthal's work is desirable.

NOTE:—Since the submission of this paper, Hull and Monte (*Southern Medical Journal,* Vol. 27, p. 918, November, 1934), and Brown and Kolmer (*Jour. of Pharmacology and Experimental Therap.,* Vol. 52, p. 462, December, 1934), have reported observations on the use of sodium formaldehydesulphoxylate, indicating that Rosenthal's claims were unjustifiable and that, in the dosage recommended by Rosenthal, the supposed antidote may be dangerous.

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A STUDY OF CONVULSIVE DISORDERS AT THE UNIVERSITY OF VIRGINIA HOSPITAL SINCE 1920.*

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Epilepsy is an age-old clinical state, yet it is always new, for every practicing physician sees a few new cases yearly. It is estimated that there are at the present time 500,000 epileptics in the United States. During the past twenty years the subject of epilepsy has experienced a new era of enthusiasm, since much research and many published studies have influenced the medical profession as a whole, to have an entirely different attitude toward the individual who has fits. They no longer look upon epilepsy as a curse from God, an inherited stigma, or a hopeless disease entity, but consider it to be a symptom of some underlying condition which should be carefully studied. Therefore, at this time, when a physician speaks of epilepsy he means nothing more than a state of convulsions, a manifestation of some physiological abnormality. It has been quite interesting to note the change in attitude toward the convulsive cases and the various new diagnostic procedures that have developed in the last decade. At first very little attention was given to the diagnosis and treatment of persons with convulsions. Occasionally a lumbar puncture was done or a skull plate taken. Strange to say, quite a few patients were not advised to use bromides or phenobarbital, and were allowed to purchase patent medicines according to their own discretion. In contrast to this, at the present time, the following procedures are used in studying a convulsive case: history, physical, neurological, routine laboratory studies of blood, urine and feces; blood-sugar and glucose-tolerance studies; blood-calcium and phosphorus studies; X-ray of skull; psychiatrical studies; special glandular and allergic studies; and encephalography.

This study is a sequel to a paper presented before this society in 1930 by Dr. David C. Wilson,[1] who made a study of seventy-five convulsive cases and concluded that the home is the proper place for the undeteriorated epileptic. The present paper is a study of 180 cases who were admitted to the University Hospital from 1920 to 1934 because of seizures. Data derived from the cases studied has been arranged in several tables, and various features of epilepsy will be discussed from the tables to follow.

*Read at the sixty-fifth annual meeting of the Medical Society of Virginia in Alexandria, October 9-11, 1934.

TABLE NO. 1

Total of cases	180	
Males	123	
Females	57	
Mentally retarded	37	(21%)
Cases with positive neurological findings	23	(13%)
Patients having aura	38	(21%)
Definite heredity	37	(21%)

Table No. 1 shows a number of miscellaneous findings of interest. As you notice, the men outnumber the women 2:1, as has always been true in every series of cases studied. The usual explanation of this is that men receive more head injuries; but the fact that women have more psychogenic convulsions and are often wrongly diagnosed hysteria certainly influences this disproportion. Many patients who have convulsions are also mentally retarded; thirty-seven in this series or 21 per cent were so affected. In most of these retarded people encephalography has shown some form of cerebral tissue destruction, such as cortical atrophy, arachnoiditis or hypdrocephalus; thus a deteriorated epileptic is one that usually shows organic brain changes. Surprisingly few epileptic patients reveal positive neurological signs indicating cerebral lesions. Twenty-three or 13 per cent were found to have positive neurological signs. Lennox[2] examined the records of 844 extramural patients and found only 15 per cent showing neurological signs, but other studies show that in institutional cases positive signs are more numerous. Thirty-eight patients or 21 per cent gave a history of aura. Lennox and Cobb[3] obtained a history of aurae in 56.2 per cent of 1,359 cases studied, which checks with a previous study by Gowers, who found 57 per cent in 2,013 patients. The type of aura is important, for it often gives a clue to the cerebral localization of the seizure. Patients who give a history of

epilepsy in direct antecedents are less numerous than generally considered. In this group thirty-seven or 21 per cent gave such a history. Kinnier Wilson[5] thinks the hereditary factor has been greatly overrated and the personal or constitutional factor underrated. Lennox[6] found that only one-fifth of non-institutional cases gave a family history of epilepsy, which is the same percentage found in our series. Other recent writers report from 16 to 27 per cent.

TABLE No. 2

Total number of cases	180
1- 4 years	20
5- 8 years	22
9-12 years	25
13-16 years	24
17-24 years	32
25-40 years	33
40-65 years	14

Convulsions may begin at any age, as is shown in the above table. This report is almost identical with a similar table compiled by Lennox,[2] based on the age of onset in 1,500 non-institutional cases. He found that practically half of the convulsions which begin during the first few years of life are due to birth injuries or acute infections. Many cases beginning around puberty are thought to be influenced by glands of internal secretion. The most frequent predisposing cause of seizures between the ages of 25 and 40, is head injuries; after 40, cerebral vascular accidents or brain tumors.

TABLE No. 3

Total number of cases	58
No abnormalities found	26 (45%)
Abnormalities found	32 (55%)
Cortical atrophy	19
Arachnoiditis	4
Arachnoiditis and hydrocephalus	5
Distortion of ventricles	4

Encephalography is of much value both in diagnosis and in directing treatment, while apparently the therapeutic value justifies its use in some cases. Encephalography has demonstrated a variety of pathological lesions as probable causes of the convulsive state. Encephalograms have been done on fifty-eight cases in this series; no abnormality was found in twenty-six or 45 per cent, while abnormalities were found in thirty-two or 55 per cent. The abnormal findings are listed in Table No. 3. In this series and according to Pendergrass,[7] Ebaugh,[8] Grant,[9] and Penfield,[10] cortical atrophy and arachnoiditis are the most frequent findings. The finding of cortical atrophy in a number of cases is quite a help in directing treatment, as dehydration is of most value when this condition is present. Grant, Dixon and Ebaugh have noticed definite therapeutic value in some cases from encephalography; also a few cases in this series have shown marked improvement after air injection. Since encephalography is of value in diagnosis and aids in directing treatment, it should be used freely in handling convulsive cases.

TABLE No. 4

Total number of cases	180
Cause undetermined	115 (64%)
Cause determined	65 (36%)
Cerebral Pathology	58
Head trauma	18
Birth injury	11
Cortical atrophy	9
Brain tumor	5
C. N. S. syphilis	5
Meningitis	4
Cerebral hemorrhage	3
Arachnoiditis	2
Encephalitis	1
Glandular	5
Pituitary dysfunction	3
Pancreatic dysfunction	2
Chemical	2
Calcium deficiency	2

The contributory causes of convulsions are many, but there must be some physiological mechanism, an unknown abnormality in the vital process of the nerve cell, which is the fundamental cause of all convulsions. It is well known that two individuals may have the same cerebral damage, yet one will have convulsions and the other will not. Since the inherent abnormality of the nerve cell in the individual who has convulsions cannot be changed, the only way to influence the convulsive state is to find a contributory factor if possible and direct treatment accordingly. Taking this series as a whole (Table No. 4) a cause or contributory factor was found in 36 per cent of cases and no cause found in 64 per cent. By dividing this group into two sections—those prior to 1930 and those since 1930,—an interesting comparison is noted. Prior to 1930 there were seventy-six cases; in 21 per cent a cause was found, and no cause in 79 per cent, while since 1930 there were 103 cases; in 47 per cent a cause was found and in 53 per cent no cause. The much

larger percentage of probable causes of epilepsy since 1930 has been made possible through more careful study and the newer diagnostic procedures, especially encephalography. Cerebral pathology was demonstrated in fifty-eight cases, as shown in Table No. 4 where the various types have been listed in order of frequency. Traumatic head injuries and birth injuries are the most frequent causes of cerebral damage producing convulsions, as is shown in the above table. The "short-circuiting" theory of Cobb[11] offers a very good explanation as to how these lesions bring this about.

Very little is known concerning the influence of the endocrine system on seizures, but it certainly seems that any marked dysfunction of the endocrine system would alter the chemistry of the nerve cell. Five cases of glandular dysfunction have been found in this group; three are pituitary,[12] and two pancreatic.[13] Many workers report a much larger percentage of endocrine disorders as the cause of convulsions. Undoubtedly there are many chemical abnormalities in the blood which influence convulsions. A deficiency of calcium is the only chemical abnormality shown in Table No. 4; two patients are mentioned, both are on calcium therapy and free of spells. Lennox and Allen[14] have studied this subject rather carefully and have found the concentration of calcium in the blood and spinal fluid of epileptic patients to be within normal limits. This review of the causes of epilepsy illustrates the possibilities of careful study in these cases.

TABLE NO. 5

Total number of cases	180
No follow-up reports	93
Follow-up reports	87
Dead	13
Living in institutions	12
Living at home	62
Improved	44
Unimproved	18

The results of the follow-up studies made during the past few months are as follows (Table No. 5): Definite information was obtained concerning eighty-seven patients; of this number thirteen are dead, twelve are living in institutions and sixty-two are living at home. Forty-four of the patients living at home have shown improvement and eighteen have not. The cases reported as improved are carrying on the various activities of life in a normal fashion. The various forms of therapy which these patients are using will now be discussed.

TABLE NO. 6

Methods of Therapy	*Improved*	*Unimproved*
Luminal	25	11
Luminal and dehydration	5	1
Pituitary extract	2	0
Calcium	2	0
High carbohydrate diet	2	0
No treatment	5	4

Since convulsions are a symptom, treatment must be individual, based on a careful study of the patient. The steps in a good therapeutic program are: First, correction of abnormalities found, second, raising the seizure threshold, and, third, measures tending to produce a general well-being.

All physical abnormalities, such as poor posture, foci of infection, digestive and endocrine disorders, should be corrected as far as possible, as often for some unknown reason such corrections are quite beneficial. Neurosurgery should be resorted to when indicated but only one case of this series has been cured by surgery—a case of dural endothelioma. Of the cases operated upon for scars, none have been cured and all are taking luminal. Two cases are free of spells on calcium therapy, but the good results are probably influenced by other factors also. Two cases are on a high carbohydrate diet; one is a true case of convulsions arising from hypoglycemia and has not had a convulsion for two years; the other is a case of questionable hypoglycemia associated with heat sensitivity, and has had no convulsions during a period of one year.

The most common methods of raising the seizure threshold are ketogenic diet, dehydration and drug therapy. Ketogenic diet[15] as a form of therapy has not been used by any of the patients long enough to draw any conclusions. For short periods it appeared to be quite effective, but since the patients could not be hospitalized very long, and since parents would not cooperate, the effect of ketogenic diet as a form of treatment cannot be properly judged. Dehydration[16] with fluids reduced to 300-400 c.c. daily has not been used except for brief periods. Bromide therapy[17] has been used by some patients from time to time with good results, but the results were just as good with phenobarbital, and since the making of frequent blood chloride and bromide determinations was quite inconvenient, the treatment

has been discontinued. Thirty-six patients are using phenobarbital and twenty-five are improved; six are using phenobarbital along with reduction of fluids to 1,000 to 1,200 c.c. daily, and five are improved. Notkin[18] states that the introduction of phenobarbital during the past twenty years has been a real therapeutic advance. Grinker[19] strongly advocates the use of phenobarbital but says its use is not carried out to fit the patient by many physicians. The dosage must be increased and the time of administration varied to fit the individual even if the dose be increased to three grains three times daily. Toxic reactions from phenobarbital are less frequent than from bromides, especially if the blood bromide is not followed. Phenobarbital is certainly the best form of treatment for the extra-mural patient, yet it is felt that dehydration enhances its value and at times ketosis aids its effect.

Finally, every effort should be made to keep the patient in an optimal state of general well-being. The patient should be kept at home where the environment is certainly more normal than in an institution; and it is the physician's duty to improve the environment by endeavoring to educate the family, school authorities and employers to look upon seizures as they would any other abnormal symptom, such as headache. Also, the patient should be encouraged to have less fear of seizures, to enter into gainful occupation and to take part in the various civic and recreational activities of the community. Since the personality of the epileptic is protected by living in the home and in the majority of cases he is a congenial and helpful member of the family, every effort should be made to keep him out of the institution. With a healthy mental attitude any form of therapeusis will be greatly strengthened.

Conclusions

1. A change in attitude toward convulsive disorders has occurred during the past twenty years.

2. Careful study of cases reveals more new causes of seizures yearly; to this end, encephalography has been especially valuable.

3. The treatment should be carried out in the home if at all possible. From this study a combination of phenobarbital and dehydration is thought to be the best method of controlling convulsions.

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Discussion

DR. FRANK H. REDWOOD, Norfolk: In a discussion of epilepsy it might be well to regard the seizure as a

symptom, which it is, rather than a disease entity, and to consider the mechanism and some of the causes of the production of the fit.

In all cases in which seizures occur there is some disturbance of the brain. Probably of first importance are seizures associated with organic brain disorders, such as brain tumor, trauma, encephalitis and the like. Then there are cases associated with general diseases, as eclampsia, Stokes-Adams disease, fevers, etc. But no matter from what causes, there are certain fundamental changes going on in the brain which are the basis for the convulsive state.

Cobb and Lennox studying heredity, concluded that there were far more epileptics among children of migranous parents than among the offsprings of epileptic parents, although they admit that there is an inheritable taint. They state that there are many "silent carriers" of the tendency to convulsions and that there must be constitutional factors present in people who develop seizures.

It has been shown by many workers that a large number of cases with seizures have increased intracranial pressure, and this is probably an important factor, yet only about 25 per cent of brain tumors, which are usually accompanied by increased intracranial pressure, cause convulsions, and seizures practically never occur in cerebellar tumors. Seizures also occur with low intracranial pressure. Epilepsy, therefore, cannot be entirely explained on the basis of increased pressure from tumors or other conditions concerned in the increase of cerebro-spinal pressure. There is certain other clinical evidence that in about 70 per cent of patients having convulsive seizures the cerebro-spinal fluid pressure is within the normal limits. According to Cobb, dehydration in the treatment of epilepsy is not beneficial through lowering of intracranial pressure.

A deficient supply of oxygen to brain cells is one very definite cause of seizures, as is demonstrated in the Stokes-Adams syndrome. Mackenzie has shown that if heart-block lasts as long as seventeen seconds, convulsions occur. Added examples of anoxemia are strangulation, carotid compression and severe hemorrhage. It is possible that the convulsions of hypoglycemia, so well described by Seale Harris, may be associated in some way with deficient oxygen to the brain. In my experience, people with a persistent low blood sugar show marked shortness of breath on slight exertion, which would tend to diminish pulmonary aeration. The known fact of oxygen lack should give us a clue in the treatment of selected patients.

Many research workers have found that in some cases there is a disturbance of the acid-base balance and that epileptics with alkalosis were much more prone to have fits than those in a state of acidosis. On this basis the old idea that meat was harmful to a convulsive patient was wrong; in fact, meat, which is an acid forming food, would seem beneficial. Further investigation along these lines will probably bring out valuable information.

Statistics vary in regard to brain trauma as a cause of epilepsy. Some authors give 4 per cent and others as high as 8 per cent in those cases where the dura was ruptured. These statistics could possibly be lowered if all acute head injuries were properly treated, the treatment being based on a thorough understanding of intracranial dynamics and a knowledge of spinal fluid production and absorption.

DR. DAVID C. WILSON, University: A striking finding during the last few years in our studies has been the occurrence in so many children and young people supposed to have so-called idiopathic congenital epilepsy, of unsuspected causes, definite signs of old inflammations or old injuries. I believe (although this is making a broad statement), that soon, through glandular studies and by other means, we are going to find that there is always some irritating cause in the brain or in the general metabolism of the epileptic or convulsive state—that there is no such thing as inherited convulsions *per se*.

Some of you may remember that in the last review of the treatment of epilepsy used in our clinic a good many different forms of treatment were used. The ketogenic diet was used but we have had so much trouble in getting it carried out adequately that we have abandoned it. I should like to hear from some of the other doctors present regarding their experience.

Dehydration, another recommended treatment, has been used only in part. We think cutting the fluids to 1,000 c.c. is all right, but the reduction of the fluid intake to 300 or 400 c.c. for a long period is not recommended. We do think that dehydration with luminal, properly used, is the best method of treatment.

Another thing brought out is that the epileptic personality is caused in the main by the reaction of the personality to society rather than by the fits.

MUSIC AND HEALTH.

EDWARD PODOLSKY, M. D.,
Brooklyn, N. Y.

Man has known of the healthful qualities of music for many hundreds of years. The first written observation of the influence of music upon the human body occurs in the oldest of all Egyptian medical papyri dating back almost 3,000 years. Homer, the immortal Greek poet, was aware of the

healing qualities of music, and he stated in lofty stanzas that it was music which stayed the flow of blood in Ulysses. The old Hebrews were also well acquainted with the calmative powers of music, and one of their early kings was saved from going mad through musical treatment.

There are many hundreds of recorded instances in ancient Greek and Roman history in which the healthful qualities of music were strikingly illustrated. Celsus used melodies as a curative procedure in insanity, and in this practice he was joined by the greatest of all Roman doctors, Galen. Martinus tells us that he was quite successful in removing fevers by song. Esculapius, the god of Medicine, cured deafness by the sound of the trumpet; Aulus Gellius is authority for the statement that sciatica was cured by gentle modulations.

As time went on the curative effects of music in certain diseases were more strikingly illustrated. Some two hundred years ago Drs. Bruckmann and Hufeland reported cases of St. Vitus dance cured by music. Dr. Desserarts also recorded that catalepsy was cured in a like manner. Another physician ascertained its influence in hysterical hypochondriac affections. A French physician, Burette, agreed with an ancient colleague that music was good for sciatica.

In fact, so widespread was the enthusiasm for music therapy during the 17th century that a pretentious work appeared, entitled, *Magis Universalis Naturae et Artis,* which contained bars of music to cure tarantula bites. This power of music to cure persons bitten by a tarantula was vigorously affirmed by Drs. Mean in England, Burette in France, and Baglivi in Italy. Their explanation of this phenomenon seems quite reasonable. They claimed that music throws the patient into a violent fit of dancing, which, by bringing on profuse perspiration, washes out the poisons and effects the cure.

Three famous rulers of history were brought back to sanity through the power of music. The first was the well-known case of King Saul of ancient Israel who was gradually brought out of a severe attack of the blues. The second was the case of Philip V, of Spain, who suffered severely from melancholia, which nearly ended in madness. Court physicians tried in vain to help him, and Farinelli, the famous castrato soprano and a favorite of the unhappy monarch, was summoned as a last resort. Being placed in an adjoining room to that in which Philip sat brooding in melancholic solitude, he sang several joyous melodies. No result was perceptible the first day. But the experiment was continued. New songs were sung, and the hours of the audience extended. The king began to show symptoms of reviving attention. He listened and gradually became absorbed in the exquisite solo concerts. His interests grew daily; he became discriminating, and, his attention being thoroughly aroused, his cure became rapid and permanent.

The third case was that of King George III, of England, who was also subjected to terrible fits of melancholia. The only solace received was from music. The king was well aware of the soothing effect on his nerves and mind, and would often ask for music when he sensed that one of his fits of melancholia was coming on.

It was toward the end of the 18th century that any serious efforts to evaluate the effects of music on the human body were initiated. Among the first was Dr. Brocklesby who conducted a series of interesting experiments on a "child not two years old, born of musical parents, who was one day remarkable for mirth and good humour upon hearing sprightly airs of musick; this gave occasion to the father and Mr. Stanley to try the effects of different measures, when they had raised the infant's spirits very high by these means. But as the chromatick and graver strains began, the child grew melancholy and sad, which temper was removed as soon as the pleasanter musick was played. Thus, as I am informed, they could, solely by this art, raise and allay joy and grief by turns in the infant's mind."

Thousands of practical applications of music therapy have been made during the past two centuries. Thus, the Guild of St. Cecilia, toward the end of the last century and the beginning of the present, organized curative concerts for asylums and hospitals with marvelous results. About the same time Dr. Bechinsky, a Russian physician of note, attended a three-year-old child who suffered from sleeplessness due to night terrors. He advised the child's mother to play one of Chopin's waltzes, and the effect is said to have been immediate and satisfactory.

In 1893, Dr. Ewing Hunter, of Helenburgh, N. B., found that soft music successfully reduced high temperatures in several cases of fever, the greatest reduction obtained being two degrees from 101 to 99. Dr. Wimmer had a few years previously de-

scribed the results of experiments with music conducted at an insane asylum. The piano was played for half an hour to 1,400 insane women. It was found that all responded to rhythm; in some cases the pulse rate rose; others became restless and beat time. With slow music the worst cases were soothed and even sent to sleep. After several experiments it was noted that all showed improvement.

Dr. Hunter, in 1892, found that music was of great value for pain and insomnia in his hospital wards. After a trial of various instruments he considered the lyre and harp yielding the best results. In 1899, Dr. Herbert Dixon described how he tested the effects of music on his patients. He found that quick, lively music suited those with slow circulation and lowered vitality; whereas soft, soothing music aided night terrors and delirium.

Dr. Xavier Vernier, in 1903, proved that music was capable of dispelling fatigue and acting as a stimulus for more work. A greater amount of work was accomplished during the playing of certain types of music than others: allegro, maestro and militaire. Largo and ante movements were found to be accompanied by more production in work than the allegretto movement.

Among the more modern experimenters in music therapy have been Binet and Courtier who, in 1895, conducted a series of experiments on the capillary circulation in the hand. They established the fact that purely sensorial excitations produced a marked effect on the amplitude of pulsation. Dissonances produced a greater effect of the same nature, and sad music nearly always provoked a reduction.

It was found by Hyde and Scalpino, in 1918, in a more elaborate series of experiments that music exerted some rather remarkable effects on the heart. They conducted their experiments in the physiological laboratories of the University of Kansas. The pieces selected with Tschaikowski's Death Symphony, characterized by slow, tragic movements, The Toreador from Carmen, and The National Emblem, a stirring, lively march by Sousa.

The Death Symphony was found to increase the heart action, but it occasioned a fall in blood pressure. The Toreador from Carmen produced an increase in blood pressure, but a decreased heart action. The National Emblem caused a slower pulse rate somewhat similar to the Toreador. It seems that this kind of music has a stimulating effect upon the circulation by increasing the blood pressure and pulse rate while lessening heart current action.

Toward the end of the last century the Italian physiologist Patrici conducted a series of experiments on the influence of musical stimuli on the circulation of the blood in the brain. A boy named Favre, aged thirteen, while acting as an assistant to his employer, a woodcutter, was severely wounded in the head by a glancing blow of an axe. Through careful treatment in the hospitals he was finally restored to health, although the wound still remained more than three inches in length. When the wound was finally healed the bones did not fully cover the exposed brain, in consequence of which changes in the circulation of the brain could be detected accurately. The boy himself was docile and intelligent. The point that Patrici set out to ascertain was, first, whether the circulation of the blood in general is influenced by music; then, whether that of the brain is more or less influenced than that of the body.

After carefully executed series of experiments the following facts were ascertained:

1. It was found that under the influence of music the pulse in the arm was elevated in the same proportions as that of the brain.

2. It was found that under the influence of certain melodies while the brain circulation expanded, that of the arm contracted.

3. The circulatory effects of music are directly related, not subordinate to the movements of breathing.

Music exerts equally profound effects on the other systems of the body. Binet and Courtier, who were among the pioneer investigators in this important field, noted the influence of musical stimuli on respiration. The reactions of a single subject were studied. In one series of experiments, isolated tones, chords and musical exercises, possessing no emotional associations, were used. These sensorial stimuli produced no respiratory modifications except an acceleration of from .5 to 3.5 additional respirations per minute. The acceleration varied directly with the increase of the movements, and was greater for the minor mode and discordant sounds.

Musical selections, chiefly songs, arousing emotional associations, according to the introspection of the subjects, varied in their influence, according to the tone evoked. Sad melodies accelerated respiration by 2.6 on the average, considerably diminished

the amplitude and produced irregularities in both acceleration and amplitude of respiration. Gay music, such as military marches, produced an acceleration of 3.8 and showed less tendency to reduce amplitude.

The evaluation of musical stimuli upon muscular activity was undertaken several years ago by professor Seashore who has done considerable work along this line. He found that the greatest pressure which could be exerted by the thumb and finger grip during silence was 4 kg. When the Giant's Motive from Rheingold was played the grip was increased to 4.5 kg. Music also tends to reduce fatigue and consequently increase muscular endurance.

In 1887, Lombard observed the reinforcement of knee jerks caused by music, while making a study of musical influence on the nervous system. He found that the knee jerk varied distinctly with the intensity of the music.

From the evidence before us it can be stated that music has a well-defined influence on all the systems of the human body, and in this fashion exerts a profound effect on human health. Good music means good health. Dr. Ingegnieros several years ago, after devoting many years to the study of music and health, declared that: 1. Musical stimuli, like all sensorial excitations, determine an increase of the general physiological activities of the body. 2. Musical stimuli in certain well-known conditions determine the transient functional reactions in the organism that characterize an emotion. 3. Physiologically, functional reactions that are specific of musical emotion do not exist. It is a matter of reactions common to the emotions in general, determined by music in certain conditions.

In conclusion, it might be stated that music exerts its influence on the body in the following ways:

1. Music increases metabolism.
2. It may increase or decrease muscular energy according to the type of music played.
3. It accelerates respiration and decreases its regularity.
4. It produces marked but variable effect on volume, pulse and blood pressure.
5. It lowers the threshold for sensory stimuli of different modes.

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ANAPHYLAXIS FOLLOWING ADMINISTRATION OF PITUITRIN.

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Protein shock or anaphylaxis due to the administration of pituitrin is extremely rare. After a careful perusal of the literature the only records I could find approaching this one were a case report by (a) James Hasson and one by (b) P. W. Wang and J. Preston Maxwell. For this reason I would like to record the following case.

Mrs. C. O. C., age 31, gravida 6, para 5, was admitted to the Roanoke General Hospital on December 19, 1933, in active labor. She was about seven months pregnant, the membranes having broken twenty-four hours previous to admission, with subsequent onset of labor pains. There were no signs of toxemia; B. P. 128/90; urine and blood were normal.

Labor progressed rapidly and a premature male infant (4½ lbs.) was delivered spontaneously at 11:30 P. M. The placenta followed at 11:45 P. M. with the loss of about 75 c.c. blood; ½ c.c. pituitrin was given intramuscularly right after the delivery of the after-birth and the patient was removed to the ward. About ten minutes later she became nauseated and vomited and began to complain of dyspnea, weakness, and generalized itching. She presented a typical picture of severe shock, the skin was cold and clammy, face and tongue swollen, radial pulse very rapid and almost imperceptible, with characteristic air hunger; the B. P. was sixty systolic. There soon followed a generalized urticarial rash with increase in the edema of the face particularly around the eyes. Seven minims of 1-1000 adrenal solution was administered intramuscularly and external heat applied.

In an hour the B. P. and 88/60, pulse 120, and

the patient was fairly comfortable. Twenty-hour hours later pulse and B. P. had returned to normal.

In view of the symptoms coming on shortly after administration of the pituitrin, it was thought to be the possible cause, and on December 21, 1933, one minim of a 1-10 dilution of obstetric pituitrin was injected intradermally. In a short time a large wheal appeared at the site of injection accompanied by intense local itching. Six weeks later at the suggestion of Dr. M. P. Rucker a second intradermal injection of a 1-1000 (one minim) dilution of obstetric pituitrin was made with the same results, although not so marked.

Discussion.—There is little doubt that this was a case of pituitrin anaphylaxis or protein shock. James Hasson obtained a somewhat similar reaction after the sixth injection of whole pituitary extract in treating a case of lupus erythematosis. The case reported by P. W. Wang and J. Preston Maxwell was almost identical in that it occurred in an obstetric patient, producing similar symptoms. The concensus of opinion seems to be that the reactions were produced by small amounts of protein in the pituitrin solution, possibly histamine.

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CARDIAC NOMENCLATURE:
Unsatisfactory Terms.

W. A. PLECKER, M. D.,
State Bureau of Vital Statistics
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During the twenty-three years existence of the Virginia Bureau of Vital Statistics a number of new terms for reporting the causes of death have come into use. The use of some of these is doubtless due to greater accuracy in diagnosis; at other times it would seem fashion plays its part.

In no class of disease has the change been so marked as in the report of cardiac affections. Some of these changes, if accurately stated, are good; namely, in the report of diseases involving the coronary arteries, such as embolism, thrombosis, and arteriosclerosis of these arteries.

Another set of terms which I desire briefly to discuss are those which are purely physiological or symptomatic, the end results of various structural changes which should in all cases be given as the true cause of death. During the last two or three years the prominence given to terms describing purely symptomatic conditions, or the end results of structural changes or infectious diseases of the heart or aorta, has become so widespread that it is really placing a great and unecessary burden upon the Bureau in the writing of letters for more definite information. In the replies to letters being handled at the time of this writing, twenty-five related to such indefinite terms. Thirteen of these gave "congestive heart failure" as the cause of death. The answers to our inquiries show that three of these were corrected to myocarditis, two to arteriosclerotic heart disease, and one each to sclerotic changes of valves, endocarditis, myocardial difficulties, previous shortness of breath, death from forcible attempt to control an imbecile, myocardial fibrosis (senile), chronic myocarditis and myocardial degeneration, and pancarditis (both endo and myo). Of the six which were first given as "acute dilatation of the heart," two were changed to chronic myocarditis, two to cause unknown, and one each to acute myocarditis and "sick ten minutes (seen post-mortem)." Four, first given as "heart failure," were changed, one each to heart disease, arteriosclerosis, myocarditis, and old age and general debility. One "cardiac insufficiency" was changed to endocarditis with mitral regurgitation and cardiac fibrillation.

Several physicians have referred me to "Criteria for the Classification & Diagnosis of Heart Disease," New York Tuberculosis and Health Association (1932), for their authority in the use of the terms, "congestive heart failure" and its synonym, "cardiac insufficiency," referred to in the index as appear-

ing on eighteen different pages. Reference to these passages show cardiac insufficiency as a symptom of the following primary diseases, listed in order of appearance: anemia, arteriosclerosis, bacterial infection (eight varieties), pulmonary emphysema, heart disease due to pulmonary emphysema, rheumatic heart disease, exophthalmic goitre, edema of the lungs and dilatation of the heart (both unsatisfactory terms), fibrosis of the myocardium, acute myocarditis, thrombosis within heart, hydropericardium, anginal syndrome, mitral incompetency, mitral stenosis, pulmonic incompetency, and tricuspid incompetency.

This formidable though partial list of causes of cardiac insufficiency (congestive heart failure), together with the still greater number of actual forms of organic heart disease, or other conditions, for which the terms are admittedly used by Virginia physicians, is ample reason why they have absolutely no place in statistical classification. Unless additional information can be secured by laborious and expensive correspondence, deaths diagnosed under the indefinite or "physiological" terms listed in the above mentioned book are necessarily classified under the title "ill-defined causes."

I am, therefore, as State Registrar of Vital Statistics for Virginia earnestly imploring the members of the medical profession to desist from the use of such indefinite terms as congestive heart failure, cardiac insufficiency, heart failure, and dilatation of the heart in assigning the cause of death on certificates. Give the anatomical diagnosis, or the nature of the bacterial infection when known. Mention rheumatic fever or syphilis when diagnosed as the cause of the heart change.

Correspondence

The Treatment of the Stump of the Appendix.

TO THE EDITOR:

There was formerly much discussion about the best method of treating the stump of the appendix. While my old chief, Dr. John A. Wyeth, merely tied the stump of the appendix with silk and cauterized it with carbolic, after leaving him I found that so many surgeons were burying the stump I adopted this procedure. After doing this for a few years, I became convinced that the technic of burying the stump was unnecessarily complicated and was really more dangerous than the simple treatment of the stump; so about twenty-five years ago I went back to the original procedure of merely ligating the stump and treating it with carbolic acid. Lately, I have often drawn a small amount of peritoneal covered fat over the stump with the end of the ligature around the base of the appendix, but at no time for twenty-five years have I attempted to invert the stump with any purse-string suture or any suture in the cecum itself.

While this simpler technic has been unpopular, it seems to be gaining in favor. Until recently the practice at the Mayo Clinic was to bury the stump of the appendix. The following is a quotation from Dr. Charles W. Mayo, of Rochester, which appears on page 103 of the February number of *Southern Medicine and Surgery*. In view of the great number of appendices that are removed at the Mayo Clinic and the careful observation of the pathologists who have charge of the postmortem examinations, this statement should attract much attention:

"There are four reasons why I (Chas. W. Mayo, Rochester, in Sou. Wes. Med., Dec.), do not invert the carbolized stump of the appendix: (1) Dr. Robertson of the Section on Pathologic Anatomy at the Clinic, has found that invariably, in cases in which appendectomy with inversion of the stump has been done in combination with some other surgical procedure and death has resulted, there is a pus pocket in the inverted stump up to twenty-one days postoperatively; (2) the cultured suture material used to invert the stump, once having run through the intestinal wall, invariably is infected with pathogenic bacteria; (3) noninversion shortens the surgical procedure, and (4) I have not had occasion to regret not having inverted the stump."

J. SHELTON HORSLEY.

February 13, 1935.
Richmond, Va.

Statement from Loudoun County Medical Society.

The following letters are published upon request of the Secretary of the Loudoun County Medical Society:

CHICAGO, ILL.,
AUGUST 20, 1934.

TO DR. W. O. BAILEY, *Secretary*,
LOUDOUN COUNTY MEDICAL SOCIETY:

A statement is being circulated to the effect that 25 per cent of the people who need medical care are either not receiving it, or are unable to obtain such services.

We are endeavoring to ascertain whether such a condition exists in your county.

It will be very helpful in this study if you will send us your estimate of the percentage of persons who need medical care, but who are either not receiving it or are unable to secure such attention. We shall be glad to have, also, your statement of the reasons for this failure to receive it, or inability to obtain medical services, if such a condition exists in your community.

It is very important that we secure, as soon as possible, reliable information on this subject. Your considered contribution to this study, therefore, will be not only very helpful, but it will be as greatly appreciated as your previous prompt assistance on other matters pertaining to medical economics.

R. G. LELAND, M. D., *Director,*
Bureau of Medical Economics, A. M. A.

LEESBURG, VA.,
SEPTEMBER 26, 1934.

MY DEAR DR. LELAND:

In reply to your letter of August 20, 1934, I have been instructed by the Loudoun County Medical Society to inform you that the percentage of people not receiving adequate medical care in this county is exceedingly small. Our activities all emanate from a county hospital of thirty beds. This hospital is modernly equipped and endowed. It is quite likely when two estates now pending settlement are settled, that the total endowment will be quite substantial. Its staff is composed of a general surgeon, an eye, ear, nose and throat specialist, several men who are expert in obstetrics, besides competent general practitioners. In addition to this the hospital possesses a consulting staff composed of some of the best talent in Washington, D. C. All physicians connected with the hospital give freely and willingly of their time and skill. In the instances where adequate medical care is not given it is usually on account of the disinclination of the individual to accept it. Besides the physicians and the hospital, we have a town nurse in Leesburg and a nurse for Loudoun County.

Our system is to have our county nurse ferret out those who require attention and who are, for one reason or another, not receiving it. We feel sure that she does her work effectively. Either the physicians take care of the indigent case for nothing or else the Board of County Supervisors agree to compensate the physician from a limited fund which the board possesses. The board is conscientious, intelligent and liberal. This society does not think that any criticism can justly be leveled at the component part of our system of practice.

This society believes in the county plan of practice. It thinks that the minority report of the committee on the costs of medical care should be carried out. What this society lacks is leadership not only here but in the state society. If the American Medical Association can develop a strong leadership which will be more cohesive and intimate, and, in which this society can have confidence, medicine would have no more ardent, loyal and cooperative adherents.

There is much hostility to the leadership of the Medical Society of Virginia. This hostility takes the form of studied indifference rather than acts of overt aggression. It exists largely because the rural and small town practitioner is ignored and patronized by the man in the city. While the physicians in towns of twenty-five hundred and less, and in rural communities, in Virginia, almost equal the urban membership, the dynastic oligarchy in Richmond which runs the State Medical Society refuses equal representation to men from these communities. This is further reflected in the appointments of delegates to the American Medical Association. If you will examine the names of the men representing the state societies in the American Medical Association, you will be amazed to realize that the rural physician has practically no representation. Urban men usually represent the Medical Society of Virginia. They know very little of rural conditions.

The society believes that the men who run the Medical Society of Virginia are very able. It takes a pardonable pride in their scientific achievements. The misfortune is that they are not informed regarding rural conditions and problems and apparently haven't the time or the inclination to obtain this information.

This society writes at this length because it believes this to be a fundamental question in the solution of our medical dilemmas. There must be many of the three thousand counties in the United States whose medical societies feel exactly as this one does. This society does not feel either an integral part of the Medical Society of Virginia or of the American Medical Association. It feels that it is being unjustly taxed by both the American Medical Association and the Medical Society of Virginia in contravention of an old principle which it thought settled at "The Boston Tea Party," over one hundred and fifty years ago. It is axiomatic that no man plays a game well from the side lines.

This society does not believe that any plan of practice will be successful without loyalty and confidence, no matter how efficient the leadership. It does not believe that the Medical Society of Virginia will ever have loyal adherents here, and indirectly the American Medical Association, as long as it is run, as it is now, by selfish men who, through geographical contiguity, have usurped powers which do not rightfully belong to them and who seek only their own personal aggrandizement and self-glorification; men who have no definite plans or objectives, embodying the interests of both urban and rural physicians equally and unequivocally.

Sincerely yours,

WM. O. BAILEY, *Secretary,*
Loudoun County Medical Society.

A Correction.

TO THE EDITOR:

In the January number of the VIRGINIA MEDICAL MONTHLY, pp. 611-612, appeared a review of Henry

J. John's "Diabetic Manual for Patient," erroneously ascribed to me. This review was written by Dr. Harry Walker; the mistake no doubt arose from the similarity in our names.

HARRY WARTHEN.

Richmond, Va.,
January 9, 1935.

Miscellaneous

Resolution Adopted by the House of Delegates of the A. M. A. Concerning Sickness Insurance and Organized Medical Care.

In compliance with the official request of the Board of Trustees of the American Medical Association, there was a Special Session of its last House of Delegates in Chicago on February 15th and 16th. The business of this session was limited to a consideration of the social and economic policies of the Association as related to pending and proposed legislation, and to sickness insurance. The first day was devoted to a very general discussion and the first night to drafting the resolution. The morning of the second day was taken up with a discussion of the resolution, after which it was re-drafted by the Committee. It was discussed again at the afternoon session and adopted. Virginia was represented at this meeting by Dr. Warren F. Draper and Dr. J. C. Flippin, delegates, and Dr. P. St. L. Moncure, alternate. Members of the Resolutions Committee were: Chairman, Dr. Wilson, of California, and Drs. N. B. Van Etten, of New York; F. S. Crockett, of Indiana; E. F. Cody, of Massachusetts, W. F. Braasch, of Minnesota; E. H. Cary, of Texas, and W. F. Draper, of Virginia.

The following resolution was adopted unanimously by the House of Delegates at this session:

The House of Delegates, believing that regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends.

The House of Delegates has given careful consideration to the record by the Board of Trustees of the previous actions of this House of Delegates concerning sickness insurance and organized medical care and to the account of the measures taken by the Board of Trustees and the officials of the Association to present this point of view to the government and to the people.

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country. The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession.

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles heretofore established by this body.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness, the advancement of medical science, the improvement of medical care, and the provision of adequate medical service to all the people. These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care. The fact that the quality of medical service to the people of the United States today is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations.

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance, whether administered by the Federal government, the governments of the individual states or by any individual industry, community or similar body. It reaffirms, also, its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency. It has never required compulsion but has always volunteered its service in anticipation of their need.

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17th, eleven principles which that committee considered fundamental to a proposed plan of compulsory health insurance. The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service, established by the medical profession

through years of experience in medical practice, are found by the committee to be essential to its own plans.

However, so many inconsistencies and incompatibilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The House of Delegates recognizes the necessity under conditions of emergency for federal aid in meeting basic needs of the indigent; it deprecates, however, any provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplores and protests those sections of the Wagner Bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner Bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

The so-called Epstein Bill, proposed by the American Association for Social Security, now being promoted with propaganda in the individual states, is a vicious deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

The House of Delegates has studied this matter from a broad standpoint, considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical standards and the continued advancement of medical educational requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans, county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June, 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service, either by prepayment plans, installment purchase or so-called voluntary hospital insurance plans, must hold, as absolutely distinct, remuneration for hospital care on the one hand and the individual, personal, scientific ministrations of the physician on the other.

The House of Delegates suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop, with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, the effects of such service on the medical profession, the applicability to rural, village, urban and industrial population, and to develop for presentation at the meeting of the American Medical Association in June, model skeleton plans adapted to the needs of populations of various types.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during January, 1935, showed the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	22	35
Diphtheria	115	173
Scarlet Fever	274	422
Measles	1,848	1,856
Meningitis	17	12
Poliomyelitis	1	3
Rocky Mountain Spotted Fever	1	0
Typhus Fever	1	0
Undulant Fever	1	4
Tularaemia	8	11
Smallpox	5	1

CEREBROSPINAL MENINGITIS

The outbreak of Cerebrospinal Meningitis occurring at the beginning of the new year is of interest, not because the total number of cases is higher than in former years, for the elevation in the rate is hardly noticeable, but rather that this year, the disease manifested itself by an extremely virulent type with an exceedingly high mortality in four small epidemics.

The history of the disease is worthy of notice. In 1805 Vieusseux of Geneva recognized the dis-

ease "sui generis" and formally reported the Geneva epidemic, naming the disease "Cerebrospinal Meningitis." In the next year (1806) in Medfield, Mass., Danielson and Mann reported an epidemic of Spotted Fever, characterized by sudden onset, marked prostration, excruciating headache, muscle rigidity, slight hypersthenia, spasticity of the neck, and opisthotonos, with an exceedingly high death rate. They had been familiar with the so-called disease "Spotted Fever" which had been known for centuries and often confused with Typhoid and Typhus Fever, but as the predominating symptoms pertained chiefly to the Central Nervous System they obtained permission to perform five postmortem examinations. They found the meninges of the brain and cord involved in various suppurative processes. Fortunately, they deemed their work worthy of a thorough report. Danielson and Mann were not aware of the work done by Vieusseux in Geneva. After these publications the medical world began to consider Cerebrospinal Meningitis as a clinical entity, and later day Epidemiologists, in studying the various reports written on the vague entity "Spotted Fever," have undoubtedly identified it as Meningococcic Meningitis.

Vaughan aptly terms the disease "A feebly, infectious, highly fatal disease, due to diplococcus intracellularis meningitidis." This dangerous organism, a gram negative intracellular diplococcus, was first noticed by Klebs in 1875 in the spinal fluid of cases dying of the disease. Gaucher studied the causative agent of this disease in 1881, and in 1833 Ughetti, and still later Marchiafava and Celli worked with this organism. However, it was not until 1887 that Weichselbaum published a paper "The Etiology of Acute Cerebrospinal Meningitis." To him is generally given the credit for the discovery of the causative organism of this disease. Later Flexner in America and Jochmann in Germany prepared Antimeningococcic Serum. Dopter, of France, found several of the many strains of this organism, and Gordon and Murray, of England, typed the organism into four chief types and prepared serum from each.

The organism of the disease is present in the flora of the nasopharynx of many individuals, but how so many can harbor the organism and so few actively contract the disease is, as yet, unsolved. The disease, spread by carriers, is spray-borne. It has been demonstrated that the number of carriers increases with the number of cases in the community, and particularly where there is crowding.

Epidemic Meningitis occurs sporadically throughout the year. In its epidemic form it is a winter disease. It is not confined to any locality, occurring in all sections of the world, breaks out in communities with excellent sanitation as well as in the unsanitary places. It is no respecter of persons, attacking the rich and poor, the vigorous and the weak, male and female, and all age groups. However, it has a predilection for children and young adults. In its epidemic form it has been found that the danger of contracting the disease increases where there are a number of people confined in small, cramped quarters. Thus, barracks, dormitories, prisons, places where more than three are sleeping in the same room, are particularly dangerous. This fact was first noticed in the War of 1812, when the death rate in cantonments was appalling. It was again emphasized in the Civil War and Spanish-American War. Thus, at the beginning of the World War the Medical Corps of the Army took the most painstaking care to check its spread. Yet, with the exception of pneumonias, no other disease created such a problem for Army Medical Corps in 1917-1918 as did this one. Since it is spray-borne and the organisms carried in the nasopharynx, the cramped sleeping quarters and crowded conditions of the barracks provide an ideal environment for its spread.

It is interesting to notice that the small epidemics in Virginia occurred under just these conditions. One was in a transient camp and another in a small city where eleven people in one family lived in four small rooms. Here, there were three cases, two of which were fatal. On the other hand, in one of the counties early in January, three families each had a single case and in all of these living conditions were above the average. While in the fourth family, where the sanitation was poor and nine people were living in two rooms, there were two cases, one of which was fatal.

In this virulent form which we have seen, with tendencies to epidemics, it is most important that the diagnosis be made early and the treatment instituted immediately. Lumbar puncture not only aids in the diagnosis, but has therapeutic value in lessening the tension. The prompt use of Anti-

meningococci Serum, given both intravenously and intraspinally, appreciably lowers the mortality. The isolation of the patient and the quarantine of the contacts protects the remainder of the community from the disease and aids in checking its spread.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Petersburg Hospital Gets Many Supplies Through Postgraduate Medical Auxiliary.

About fifty people attended the tea and shower that was held at the Nurses Home, Petersburg, Va., on January 29th. A large supply of hospital linens and other supplies were donated at this time and a most enjoyable afternoon was spent.

Gifts included in the shower were: 85 tavern sheets, 116 pillow cases, 1 spread, 70 turkish towels, 118 huck towels, 50 yards of unbleached cotton, 50 yards of toweling, 16 felt pads for mattresses, 2 all wool wheel chair blankets, 14 all wool bed blankets, 14 new pillow ticks, and 2 dozen wash cloths. The Medical Auxiliary had already contributed 31 glass trays, 15 glass pitcher trays, 5 dozen casters for beds, 2 dozen metal wastebaskets and 1 dozen fruit bowls. The value of the gifts was estimated to be approximately $300.50.

The regular meeting of the Auxiliary followed and plans for the luncheon and February meeting at the Country Club were discussed.

Auxiliary to the Richmond Academy of Medicine.

At the February session of the Auxiliary to the Richmond Academy, the newly elected officers were installed with an impressive ceremony conducted by the parliamentarian, Mrs. Lee E. Sutton. (Mrs. M. N. King, of Norfolk—we profited by your example and yearn to attain to the perfection of your installation service in Alexandria in October.)

Mrs. Andrew Shetter, the new president occupied the chair after being installed. Mrs. Shetter proved her devotion to the cause by presenting evidence of much thought and hard work in a well organized plan for the year. She had already secured splendid chairmen for her many committees. We are looking forward to a revival of interest under Mrs. Shetter's fine leadership. She sends cordial greetings through this page to those who were absent at her first meeting and bespeaks their loyal and sympathetic support for her administration.

A number of new faces appeared at this meeting and several others whom we had "loved long since" and *thought* we had lost came home again. Welcome, new members, and thrice welcome to the returning prodigals. You have made our hearts glad.

The speaker on this occasion was our own Mrs. Joseph Bear, president of the State Auxiliary. She spoke of her hopes and fears, her aims and ambitions for the Richmond Auxiliary. She held up to us our old rival, Norfolk, who always surpasses us in achievement, urging us to greater effort that we may by some lucky strategy outdistance them one time. The reminds us, what is the ma ter with Norfolk? We think they are strangely quiescent which scents of danger. Even now they may be planning something to spring upon us. We wish they would give us some inkling of what is in their minds. Speak up, Norfolk, will you take a dare?

Cooperation Needed.

The National Chairman of Press and Publicity has recently written in the National *Newsletter* urging regular reports from state chairmen of publicity. She puts it in this charming way: "If this *Newsletter* pleases you, we are happy; if it bores you or strikes you as inadequate, we are in the dust but lift our lowly head enough to whisper that we depend entirely on the news sent in by the state chairmen of press and publicity."

Even so, your state chairman depends upon the news sent in by local chapters, both for this page and for reports to the National. What can she do when these reports fail to come? And none have come for many months. A resident of Richmond, she is able to gather the news of Auxiliary activities in Richmond. We do not want all of the space for Richmond. We want news of Norfolk, Petersburg, Alexandria, Lynchburg, Warwick County, James City and New Kent, Elizabeth City, and

Mid-Tidewater. This is our roll call! Who will answer first?

Death of Texas State President.

Word was received the middle of February of the sudden passing of Mrs. Preston Hunt, President of the Woman's Auxiliary of the State Medical Association of Texas, at her home in Texarkana, Texas. Our State Auxiliary extends its heartfelt condolences to her family.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council of Pharmacy and Chemistry of the American Medical Association:

Bilhuber-Knoll Corporation
  Dilaudid Compound Tablets, ½ grain
Hoffmann-La Roche, Inc.
  Alurate
    Alurate Tablets, 1 grain
    Elixir Alurate
  Sodium Alurate
    Capsules Sodium Alurate, 3½ grains
Jensen-Salsbery Laboratories, Inc.
  Diphtheria Toxoid, Alum Precipitated (Refined)
Merck & Co., Inc.
  Cebione—Merck
    Ampules Cebione—Merck, 0.1 Gm.
    Tablets Cebione—Merck, 0.01 Gm.
Wm. S. Merrell Co.
  Diothane Ointment 1% Ophthalmic Tube
Frederick Stearns & Co.
  Neo-Synephrin Hydrochloride Jelly
Winthrop Chemical Co., Inc.
  Ampules 1% Isotonic Solution Tutocain with Suprarenin, 1:20,000, 3 c.c.
  Tablets Alypin ⅓ grain
Non-proprietary Articles
  Cevitamic Acid
  Aminoacetic Acid

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council but not described in N. N. R. (New and Non-official Remedies, 1934, p. 443):

Merck & Co., Inc.
  Creosote—Merck.

PROPAGANDA FOR REFORM

Requirements for Advertising of Abdominal Belts, Corsets and Special Supports.—The Council on Physical Therapy has adopted the following minimum standards for acceptance and policy pertaining to the selling and advertising of abdominal belts, corsets and special supports recommended for therapeutic use: I. Misleading claims concerning the structure, material, workmanship, etc., will warrant rejection of the product. II. Acceptance or rejection will be based in a large measure on the advertising claims of the manufacturer and on the therapeutic evidence presented. In advertising either to the public or to the profession, the following therapeutic claims are acceptable to the Council: A. Such products form a satisfactory method of support in certain individuals with large pendulous abdomens. B. Similar supports may be used in the case of large pendulum breasts. III. In advertising solely to the profession, manufacturers may use the additional therapeutic claims as follows: A. In pregnant women, where abdominal or pelvic support is needed. B. In cases of hernia. C. In certain definite displacements of abdominal viscera. D. In selected cases of weakness of abdominal walls, due to infantile or other forms of paralysis. E. In selected cases of defective posture in connection with corrective exercises or other treatment. F. In selected cases of low back pain. G. In selected cases of circulatory disturbances of the extremities. H. In occasional cases after laparotomy. I. In occasional cases of injury to the extremities. IV. The Council will reject any devices sold by manufacturers who persist in the practice of rebating physicians who desire it, a certain percentage of the selling price of these devices. (Jour. A. M. A., December 22, 1934, p. 1946.)

Book Announcements

Observations of a General Practitioner. By WILLIAM N. MACARTNEY, M. D. Boston. Richard G. Badger, Publishers. The Gorham Press. Octavo of 478 pages. Cloth.

This volume is an attempt by a general practitioner to place on record his own personal views concerning the practice of medicine in a small town and rural section. The book covers a great range of philosophy together with a more or less haphazard account of the author's views about the nature of disease, the treatment of patients afflicted with various maladies, and his personal methods for doing different operative procedures. The diseases discussed by the author are those commonly found in general practice, and he gives his personal experiences with the use of methods and drugs which he enthusiastically recommends in the treatment of these diseases.

The book has ninety chapters. With such a large number of chapters in a book having 467 pages, it would be unusual to find any detailed information; rather, general statements make up the sum of most of the discussions. No attempt will be made to review this book in detail because it is hardly the type which lends itself to such a review. Throughout the book one finds statements which are entirely

unjustified and in many instances dangerous if taken seriously. However, in many of the chapters there are practical suggestions both philosophical and scientific which are usful in the general practice of medicine.

The reviewer feels that there is a real need for a book of the type which this volume attempts to cover, nevertheless, he feels that it is probably unwise to attempt to write a humorous novel and mix this with scientific and practical observations. Everyone appreciates the fact that there is much useful information in the hands of the so-called general practitioner, but rarely does he find time or energy to put this data in writing. The author has attempted to do this but, unfortunately, he is prejudiced from the beginning. He criticises the specialist and all others who have information of a specialized character, and yet proceeds to give advice in fields which long since have been recognized as the domain of specially trained men.

I doubt if the book can justify itself as a medical essay but it is a rather refreshing and amusing volume for the author has selected for illustration and trite criticism many amusing stories. Anyone who is interested in an evening of amusement and at the same time wishes to find practical and useful suggestions should read this book, but not too seriously. Personally, I would like to see the author write another volume and include in it the practical suggestions which he makes throughout the book in the routine care of sick people, and omit for a separate volume the stories and unrelated sarcasm.

The book is dedicated to "those humble members of our beloved profession who are not already hopeless victims of Chronic Elephantiasis of the Ego." One is convinced after reading the book that the author did not dedicate it to himself.

WM. B. P.

The Heart Visible. A Clinical Study in Cardiovascular Roentgenology in Health and Disease. By J. POLEVSKI, M. D., Attending Physician and Cardiologist, Newark Beth Israel Hospital. Philadelphia. F. A. Davis Company. 1934. Octavo of 207-xvii pages. Illustrated. Cloth. Price, $5.00.

The author, in emphasizing the enormous value of fluoroscopy of the heart and great vessels, in all positions, proves at the very onset that he is well informed. The work is not only a study of cardiovascular roentgenology, but a successful attempt to explain clinical cardiologic findings in roentgenologic terms.

From a purely X-ray standpoint, it is rather unfortunate that the term "anteroposterior position" is employed throughout the book, in spite of the fact that the author explains on page 41 that such usage "implies the posterior-anterior position generally used by roentgenologists." In the same manner, the term "oblique" is often rather loosely used. It would be more satisfying to the roentgenologist if he were told whether the "right" or "left" oblique were referred to, in several instances.

It is most refreshing to find a book covering the subject so thoroughly without including too many of the proposed, and often too theoretical, minute methods of heart measurement, of such questionable value to the practical cardiologist, in his routine work.

Part I, on general considerations, could well be followed in present-day radiologic texts, as it is founded on fundamental X-ray facts, too often disregarded in considering the chest as a whole.

The most experienced roentgenologists can profit by reading the chapters on the pericardium and great vessels. Only too often they neglect the former, and attempt to go beyond their sphere of usefulness in attaching an etiologic diagnosis, in the latter.

F. B. M.

Manual of Clinical Laboratory Methods. By PAULINE S. DIMMITT, Ph. G., Medical Technologist for the Stout Clinic, Sherman, Texas, etc. Philadelphia. F. A. Davis Company. 1934. Octavo of 156-ix pages. Illustrated with 36 engravings, including 7 full page colored plates. Cloth. Price, $2.00.

In this book there are given the usual procedures for the laboratory examinations of urine, blood, sputum, gastric contents, blood chemistry and so on. In addition, there are described tests which have recently come into prominence, such as the Aschheim-Zondek test for pregnancy. The text is accompanied by numerous illustrations, most of which are reprinted from other authors.

As a manual of methods, the book is concise and accurate. As such, it will appeal to laboratory technicians who are more interested in the "how" than the "why" of laboratory examinations. Medical students and practitioners will undoubtedly prefer one of the standard works which gives an interpretation of results as well as the technique of examinations.

J. P. BAKER, JR.

Virginia Medical Monthly

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WYNDHAM B. BLANTON, M. D., *Editor*
AGNES V. EDWARDS, Richmond, *Business Manager*

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Editorial

Medical Economics.

On January 15, 1935, the Committee on Economic Security made a report to the President. The following part of the report which deals with ill health, the Public Health Services and Health Insurance will prove of interest to physicians.

RISKS ARISING OUT OF ILL HEALTH

Illness is one of the major causes of economic insecurity which threaten people of small means in good times as in bad. In normal times from one-third to one-half of all dependency can be traced to the economic effects of illness. The money loss caused by sickness in families with less than $2,500 of income per year has been estimated at a total of $2,400,000,000 per annum, of which $900,000,000 represents wage loss and $1,500,000,000 the expenses of medical care.

The seriousness of this hazard, however, lies less in the total loss involved than in its unequal distribution. Nearly half of all people suffer no illness during a normal year but 7 per cent have three or more illnesses and nearly 15 per cent have illnesses that disable them for more than a week. Studies of the actual expenditures for medical care in a large number of urban families with incomes ranging from $1,200 to $2,000 per year, relating to the years 1928 to 1931, disclosed that of each 1,000 families, 218 had medical bills in excess of $100 and 80 in excess of $200; among the 80, 16 had medical costs ranging from $400 to $700, and 4, sickness bills amounting to more than one-half of their incomes.

The figures cited explain why many millions of American families live in dread of sickness. Families with small incomes are compelled to sacrifice other essentials of decent living when serious illness strikes some member, go without needeed medical care, or depend upon the gratuitous or near gratuitous services of doctors and hospitals. A mere statement of this situation is sufficient to show that it is both unfair to the medical profession and very costly to the public.

PUBLIC HEALTH SERVICES

As stated by the medical advisory board of this committee, in a brief progress report recently filed:

> A logical step in dealing with the risks and losses of sickness is to begin by preventing sickness so far as is possible.

Much progress has been made in this respect, yet the fact remains that despite great advances in medicine and public-health protection, millions of our people are suffering from diseases and thousands die annually from causes that are preventable. The mortality of adults of middle and older ages has not been appreciably diminished. With the changing age composition of our population the task of health conservation must be broadened to include adults as well as children. Even minimum public-health facilities and services do not now exist in many large areas. Of 3,000 counties, only 528 have full-time health supervision and only 21 per cent of the local health departments were rated in 1933 as having developed a personnel and service providing a satisfactory minimum for the population and the existing problems.

Evidence is accumulating that the health of a large proportion of the population is being affected unfavorably by the depression. The rate of disabling sickness in 1933 among families which had suffered the most severe decline in income during the period 1929 to 1932 was 50 per cent higher than the rate in families whose

incomes were not reduced. For the first time in many decades the death rate in our large cities is higher this year than it was last year despite the absence of any serious epidemics. In the face of these evidences of increased need local appropriations for public health have been decreased on the average by 20 per cent since 1930. The average per capita expenditures from tax funds for public health in 77 cities in 1934 were 58 cents as contrasted with 71 cents in 1931. It is not too much to say that in many parts of the country the men and women in public-health work are very discouraged.

In this situation there is great need for a Nation-wide program for the extension of preventive public-health services. As was well stated by the Medical advisory board:

> At the present time appropriations for public-health work are insufficient in many communities, whereas a fuller application of modern preventive medicine, made possible by larger public appropriations would not only relieve such suffering but would also prove an actual financial economy. Federal funds expended through the several States in association with their own State and local public-health expenditures, are, in our opinion, necessary to accomplish these purposes and we recommend that substantial grants be made.

In accord with these principles and following the specific suggestions of the Advisory Committee on Public Health, we recommend: (1) Grants-in-aid to local areas unable to finance public-health programs with State and local resources, to be allocated through State departments of health; (2) direct aid to States in the development of State health services and the training of personnel for State and local health work; (3) additional personnel within the United States Public Health Service for the investigation of disease and sanitary problems which are of interstate or national interest and the detailing of personnel to other Federal bureaus and to States and localities. The Advisory Committee on Public Health suggested that in order to carry out these policies the total appropriation to the Public Health Service be increased by $10,000,000 per year, in contrast with $5,000,000—four cents per capita—now spent by the Federal Government in all its departments for human health services. The advisory committee also reported that the needs of the country are considerably in excess of the additional expenditures suggested but expressed the view that a larger amuont cannot be efficiently spent until necessary additional personnel has been trained and further tests of practical procedures have been made through which certain diseases can be more effectively controlled. It is not within our province to say whether the precise amount suggested should be appropriated, but we strongly endorse the recommendation for increased Federal participation in the prevention of ill health.

It has long been recognized that the Federal, State, and local Governments all have responsibilities for the protection of all of the population against disease. The Federal Government has recognized its responsibility in this respect in the public-health activities of several of its departments. There also are well-established precedents for Federal aid for State health administration and for local public facilities, and for the loan of technical personnel to States and localities. What we recommend involves no departure from previous practices, but an extension of policies that have long been followed and are of proven worth. What is contemplated is a Nation-wide public-health program, financially and technically aided by the Federal Government, but supported and administered by the State and local health departments.

HEALTH INSURANCE

The development of more adequate public-health services is the first and most inexpensive step in furnishing economic security against illness. There remains the problem of enabling self-supporting families of small and moderate means to budget against the loss of wages on account of illness and against the costs of medical services needed by their members. The nature of this problem and the nature of the risks which it involves calls for an application of the insurance principle to replace the variable and uncertain costs for individuals by the fixed and predictable costs for large groups of individuals.

Insurance against the costs of sickness is neither new nor novel. In the United States we have had a long experience with sickness insurance both on a nonprofit and commercial basis. Both forms have been inadequate in respect to the protection they furnish, and the latter—commercial insurance—has in addition been too expensive for people of small means. Voluntary insurance holds no promise of being much more effective in the near future than it has been in the past. Our only form of compulsory insurance has been that which is provided against industrial accidents and occupational diseases under the workmen's compensation laws. In contrast other countries of the world have had experience with compulsory health or sickness insurance applied to over a hundred million persons and running over a period of more than fifty years. Nearly every large and industrial country of the world except the United States has applied the principle of insurance to the economic risks of illness.

The committee's staff has made an extensive review of insurance against the risks of illness, including the experience which has accumulated in the United States and in other countries of the world. Based upon these studies the staff has prepared a tentative plan of insurance believed adequate for the needs of American citizens with small means and appropriate to existing conditions in the United States. From the very outset, however, our committee and its staff have recognized that the successful operation of any such plan will depend in large measure upon the provision of sound relations between the insured population and the professional

Underscoring ours.

practitioners or institutions furnishing medical services under the insurance plan. We have accordingly submitted this tentative plan to our several professional advisory groups organized for this purpose. These advisory groups have requested an extension of time for the further consideration of these tentative proposals, and such an extension has been granted until March 1, 1935. In addition, arrangements have been effected for close cooperative study between the committee's technical staff and the technical experts of the American Medical Association.

Until the results of these further studies are available, we cannot present a specific plan of health insurance. It seems desirable, however, to advise the professions concerned and the general public of the main lines along which the studies are proceeding. These may be indicated by the following broad principles and general observations which appear to be fundamental to the design of a sound plan of health insurance.

1. The fundamental goals of health insurance are: (*a*) The provision of adequate health and medical services to the insured population and their families; (*b*) the development of a system whereby people are enabled to budget the costs of wage loss and of medical costs; (*c*) the assurance of reasonably adequate remuneration to medical practitioners and institutions; (*d*) the development under professional auspices of new incentives for improvement in the quality of medical services.

2. In the administration of the services the medical professions should be accorded responsibilty for the control of professional personnel and procedures and for the maintenance and improvement of the quality of service; practitioners should have broad freedom to engage in insurance practice, to accept or reject patients, and to choose the procedure of remuneration for their services; insured persons should have freedom to choose their physicians and institutions; and the insurance plan shall recognize the continuance of the private practice of medicine and of the allied professions.

3. Health insurance should exclude commercial or other intermediary agents between the insured population and the professional agencies which serve them.

4. The insurance benefits must be considered in two broad classes: (*a*) Cash payments in partial replacement of wage loss due to sickness and for maternity cases, and (*b*) health and medical services.

5. The administration of cash payments should be designed along the same general lines as for unemployment insurance and, so far as may be practical, should be linked with the administration of unemployment benefits.

6. The administration of health and medical services should be designed on a State-wide basis, under a Federal law of a permissive character. The administrative provisions should be adapted to agricultural and sparsely settled areas as well as to industrial sections, through the use of alternative procedures in raising the funds and furnishing the services.

7. The costs of cash payments to serve in partial replacement of wage loss are estimated as from 1 to 1¼ per cent of pay roll.

8. The costs of health and medical services, under health insurance, for the employed population with family earnings up to $3,000 a year, is not primarily a problem of finding new funds, but of budgeting present expenditures so that each family or worker carries an average risk rather than an uncertain risk. The population to be covered is accustomed to expend, on the average, about 4½ per cent of its income for medical care.

9. Existing health and medical services provided by public funds for certain diseases or for entire populations should be correlated with the services required under the contributory plan of health insurance.

10. Health and medical services for persons without income, now mainly provided by public funds, could be absorbed into a contributory insurance system through the payment by relief or other public agencies of adjusted contributions for these classes.

11. The role of the Federal Government is conceived to be principally (*a*) to establish minimum standards for health insurance practice, and (*b*) to provide subsidies, grants, or other financial aids or incentives to States which undertake the development of health insurance systems which meet the Federal standards.

Underscoring ours.

On February 16, 1935, the Associated Press carried the following news item: "The American Medical Association today reiterated its vigorous opposition to compulsory sickness insurance plans being studied by the President's Committee on Economic Security. But it tempered its stand by approving projects for setting up systems of voluntary illness insurance on a community basis."

Apathy.

In spite of President Smith's urgent appeal to the membership at large of the Medical Society of Virginia to meet in Richmond with the Council when it considered the other day the most important matter that it has ever considered at an *ad interim* meeting, only a corporal's guard put in its appearance. The question before the gathering was what shall be the attitude of the profession of Virginia toward approaching legislation directed at setting up sickness insurance in this country which seems certain to follow the forthcoming report of the President's Committee on Economic Security. No definite action was taken. There were those who wished to oppose any attempt on the part of the Federal Government to inaugurate health insurance

in this country, contending that it has not worked in other countries, gives an inferior order of medical service, underpays and degrades the physician; and there were those who advocated a cooperative attitude, proposing that we fall in line with the Government and direct our efforts toward protecting the medical profession against particular abuses known to exist in certain types of health insurance, arguing that from an inside position much more effective work could be done than from an outside. The position taken by the Council was a compromise, apparently completely satisfactory to neither point of view. As the matter now stands we are committed to the policy of watchful waiting.

It is doubtful if we can stand aside much longer. The physicians of Virginia will certainly have other opportunities to express themselves on this subject. Perhaps another meeting of the Council will be called and the profession of Virginia will again be invited to sit in with them. Certainly at the meeting of the Society in October this will be a burning issue.

Come Let Us Reason Together.

For the next few months we are in for considerable discussion of what, for want of a better term, we have fallen into the habit of calling medical economics. Up to the present time physicians have been altogether too much given to considering this question from their own point of view. In every case of illness there are two parties to be considered, the patient and the doctor. In this dual relation the doctor has always prided himself upon putting the patient's interest before his own. He must adhere to this principle in discussing medical economics.

We cannot afford to turn a deaf ear to what the public is saying, remembering that in Virginia patients outnumber doctors by about 1,000 to 1. Laymen are reading, writing and talking about economic security and the medical care of the American people is much on their hearts and minds. We are no longer dealing with the propaganda of a few Foundations or socialistically inclined radicals or even of a noisy group close to the Administration. The daily papers, current magazines, women's clubs, councils of social agencies are actively discussing health insurance

There is probably no way to stop some of the social legislation now brewing in the country, probably no way to avoid National Health Insurance. But there is a golden opportunity now offered for the medical profession to come forward and steer the hand that writes the laws under which these things will shortly operate. Our help is desired. Our help is necessary. We better than any other group know the dangers and weaknesses of these experiments. Self interest urges cooperation. The public attitude demands it.

The Air Hazard.

The theory of air borne infection in the sense that that term was employed a hundred years ago has been exploded. In the respiratory diseases, droplet infection has been properly regarded as of the first importance. Until recently to keep at a safe distance from a coughing, sneezing, talking patient, or to interpose some barrier such as the gauze mask, was deemed sufficient. But now William F. Wells of the Harvard University School of Public Health comes forward with disquieting news. He appears to have shown that there are two types of droplets sprayed into the air by the cougher. With the first we are familiar. They are relatively large particles and fall to the floor in a short while and within a few feet of where they are ejected. The other type of droplet, to which little attention has been paid so far, is minute and evaporates before it can reach the floor. In consequence the bacteria it contains are left suspended to float here and there subject to air currents. It has been shown that the diphtheria bacillus, the pneumococcus and certain strains of streptococci may remain viable and suspended in air for as long as forty-eight hours.

If this report can be substantiated the implications are clear. It now becomes apparent that it is not only imperative to keep out of the path of the cougher, sneezer or voluble conversationalist who harbors virulent respiratory organisms, but that we enter the room in which such persons have been for any length of time at great hazard, and that something must be done to protect the well from this type of droplet infection. Obviously the line of attack must be directed at the cougher, sneezer and talker, either in the prevention of droplet contamination of the air or by rendering the air innocuous.

Thromboplastic Agents.

Oscar W. Bethea, in a recent issue of the *International Medical Digest,* has rendered a distinct

service to the medical profession by calling attention to the utter worthlessness of most so-called thromboplastic agents. Into the limbo of discarded therapeutic procedures he has placed an impressive array of these supposed remedies. The list includes normal horse serum, diphtheria antitoxin, coagulose, hemoplastin, coagulen, brain lipoid, cephalin, solution of brain extract, fibrogen, stypticin, styptol, and gelatin. The question mark is appended to the use of calcium, ergot, epinephrin and whole blood injections. In the author's opinion only the transfusion of whole blood has stood the test of time and is still to be regarded as the one great thromboplastic measure.

Good-Bye Miss Dinwiddie—and Thank You.

Miss Emily W. Dinwiddie, former Director of the Children's Bureau of the State Department of Public Welfare, has left the State of Virginia. While director of this bureau she made a survey of the State hospitals for mental patients, their receiving systems and their hospitalization needs. This report, although it appeared last year, has not received the public recognition it deserves. It is exhaustive, thoroughly documented, revealing, and, in places at least, provocative of chagrin.

Miss Dinwiddie begins by pointing out that more than 9,000 new admissions were received by the four State sanitaria during the last four years and that the rate of increase of patients to population is mounting each year, especially among the colored people, and that this is a large problem that must shortly be solved.

In reviewing the present receiving system of these institutions it is shown that there are at present several ways in which a patient may enter one of the State hospitals. In an emergency he may be sent there on certificate of a physician. This is a temporary type of admission and is rarely resorted to. He may be committed by two physicians and a judge or justice of the peace sitting as a commission of lunacy. This is the usual method in operation in Virginia. It is antiquated, subject to delay and expense, and is being discarded by more progressive communities. Finally, the law provides for voluntary admission. There are many obvious advantages to this method, but in Virginia it is little resorted to, because patients entering the hospital by this route have to pay their own expenses. This is obviously an example of the State's being penny wise and pound foolish.

Attention is next drawn to the most iniquitous feature of our present system, the custom—the frequent custom—of lodging the committed person in jail pending his delivery to the State hospital. About half of the annual admissions to the hospitals have gotten there through the jail as an intermediary station. The time spent in jail may be quite long. Miss Dinwiddie refers to one case in which it was for some months. One does not have to point out that our jails are not calculated to benefit mental disease, especially in the depressed, the hypersensitive, the fearful. Still more astonishing is the reason for this delay. It seems that the jail authorities are paid $1.00 a day for the custodial care of these unfortunate charges—more than is paid for other inmates. It is therefore profitable to retain the insane in jail. Miss Dinwiddie remarks, "It is not pleasant to know that Virginia paid over 11,000—in fact almost 12,000—patient day's board in jail last year . . ." This smacks of the Middle Ages.

The report refers to the overcrowding that prevails in all of the hospitals, especially in the Central State Hospital where the hospital population exceeds the theoretical capacity by 390. Reference is made to the great need for nurses' homes, attendants now being quartered in close proximity to patients. Emphasis is also placed upon the utter inadequacy of our institutional care of the feebleminded. For this situation several valuable recommendations are presented—the use of foster families in which to board suitable patients, colony developments, and the use of emergency tents.

Discussing treatment and training service for patients, the investigation shows that inadequate segregation exists—the proper segregation of the tuberculous, for instance, is stressed. Inadequacy of professional personnel is next discussed. It appears that the American Psychiatric Association recommends 1 physician to every 150 patients. The Central State Hospital with more than 3,000 patients has five physicians aside from the Superintendent. The recommended ratio of trained nurses to patients is 1 to 8. In Virginia the ratio is 1 to 272. At first glance the need for social workers among mental patients must be apparent. In Virginia we have 1. New York employs 51. Miss Dinwiddie, while com-

mending the psychiatric pavillion at the University of Virginia Hospital, thinks we should have psychiatric hospitals in Virginia such as the one which composes a part of the New York Medical Center, and, while praising the work that has been done in sterilizing the feebleminded, she believes the work should be carried forward much faster and upon a much wider scale.

The report next considers what can be done to prevent mental disease in Virginia. We apparently need mental hygiene clinics and more hospital social service. Only beginnings have been made in the creation of the State Mental Hygiene Clinic, the Children's Memorial Clinic in Richmond and the Child's Guidance Clinic in Charlottesville. We require traveling psychiatric clinics. We should have a real mental hygiene program for the schools where 2 per cent of the children are said to be in need of some sort of skilled mental guidance. We need community supervision, we lag in mental hygiene education and we are woefully deficient in the means and fruits of research. The report closes with a number of admirable recommendations which should quickly be followed up.

Virginia, the mother of the institutional care of the insane in this country, is a laggard in psychiatric progress. To whom can we appeal to set the house in order? To the General Board of the Hospitals? Boards are long and hard and narrow and full of splinters. To the legislature? That body is assumed to be the mouthpiece of the people. It is then to the people of Virginia, to their pride, to their humanitarianism, that we must appeal. This can be accomplished only through education, and who is better prepared to inform the people of the State than the physician?

Department of Clinical and Medical Education of the Medical Society of Virginia

Pediatric Course to be Given in South Boston.

The Department has completed arrangements for conducting in South Boston, beginning March 5th, a postgraduate course in Pediatrics. Dr. Samuel F. Ravenel, of Greenville, S. C., has been engaged to give the course. Dr. Ravenel is a graduate of Johns Hopkins University Medical School. He has practiced as a specialist in Pediatrics for several years in Greenville, and in Greensboro, N. C. He is a regular lecturer and clinician at the Southern Pediatric Seminar held each summer at Saluda, N. C. He is highly recommended by leading pediatricians in the East.

The meetings in the South Boston course will be two a week, on Tuesdays and Wednesdays, for a five-week period. The topics under consideration in the order in which they be will be discussed are as follows:

Problems of the newborn.
Infant feeding.
Advances in the therapy of contagious diseases: protective immunization.
Common respiratory infections.
Common gastro-intestinal disorders.
Dehydration—acidosis—alkalosis.
Diseases of the G-U tract.
Diseases of the blood.
Endocrine disorders.
Common diseases of the central nervous system.

Secretary Takes Part in National Program.

The Executive Secretary of the Department has accepted an invitation to attend the meetings of the Council on Medical Education and Hospitals of the A. M. A. on February 18th and 19th in Chicago and discuss a paper on extension teaching in medicine by Dr. Charles G. Heyd, the Professor of Clinical Surgery at the New York Postgraduate Medical School. The fact that a representative of the Department has been invited to participate in this program of the A. M. A. on extension teaching in medicine is a recognition of the work that the Medical Society of Virginia is doing in this field.

Lecture Notes Still Available.

Once more we remind the readers of this column

that there are still available a few copies of the mimeographed lecture notes on prenatal and postnatal instruction by Dr. Lapham. Sets of these notes will be sent free so long as the supply is unexhausted.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Virginia State Board of Medical Examiners.

Following is a list of applicants who were licensed at the December, 1934, meeting of the Board to practice medicine in Virginia:

Dr. James Van Allen Bickford, Jr., Norfolk, Va.
Dr. Russell von Lehn Buxton, Philadelphia, Pa.
Dr. Joseph Dingus Culbertson, Norton, Va.
Dr. Lester John Dugan, Clarendon, Va.
Dr. David Samuel Garner, Richmond, Va.
Dr. Kenneth Newton Gould, Stonega, Virginia.
Dr. John Abb Payne, III, Norfolk, Va.
Dr. Joseph Alexander Robinson, Bluefield, W. Va.
Dr. Roy Edmund Schirmer, Bonny Blue, Va.
Dr. James William Tankard, Philadelphia, Pa.
Dr. Edwin A. Harper, Bedford, Va.
Dr. David Davis Hatfield, Yukon, W. Va.
Dr. John William Kennedy, Norfolk, Va.
Dr. Frederick Byrne Mandeville, Richmond, Va.
Dr. James Franklin Hays, Yorktown, Va.
Dr. H. L. Henry, Capon Bridge, W. Va.
Dr. Joseph Junius Jones, Jr., Hampton, Va.
Dr. Clarence Edwin Keefer, University, Va.
Dr. Verlin Estelle Miles, Vienna, Va.
Dr. Lawrence John Motyca, Norfolk, Va.
Dr. Clifford Lee Mullen, Richmond, Va.
Dr. Charles Darwin Thomas, Sanatorium, N. C.
Dr. James Savage Woodward, Lynnhaven, Va.
Dr. Joseph Wall Wycoff, Brooklyn, N. Y.

The Mid-Tidewater Medical Society

Held its regular quarterly meeting at West Point, Va., on January 22nd. At the morning session a business meeting was held, at which time Dr. Robert Hoskins presided and inducted into office the incoming president Dr. E. L. W. Ferry, of Millers Tavern. Dr. Ferry during the past year has been president-elect. Luncheon was served to the members and visitors at Trice Hotel, those present being Drs. M. H. Eames, J. R. Parker, Paul Pearson, Warner Lewis, Horace Hoskins, Robert Hoskins, Jas. W. Smith, Harry Tabb, Jas. D. Clements, R. D. Bates, Virgil Stiff, Hawes Campbell, Sr., Ned Ferry, W. S. Cox, William E. Croxton and M. H. Harris. The following visitors were guests of the society: Drs. F. S. Johns, Rob Bates, J. McCaw Tompkins, and J. Morrison Hutcheson, of Richmond, and Mr. Leroy Riddle, of West Point, Va.

An interesting and instructive program was heard in the afternoon. Dr. J. Morrison Hutcheson spoke on "The Circulation in Pneumonia." His talk was followed by Dr. J. McCaw Tompkins, who spoke on "The Treatment of Pneumonias." A general discussion by the members was led by Dr. Horace Hoskins.

Dr. Tompkins in speaking of the prevention of pneumonia emphasized the importance of treating colds and grippe as a potential pneumonia, admonishing the physicians that many of these cases led to pneumonia and could have been prevented by rest in bed and proper care of the slight minor ailment.

The meeting adjourned to meet on the fourth Tuesday in April at Saluda.

M. H. HARRIS, *Secretary.*

Arlington County Medical Society.

The following have been elected as the officers of this Society for the year 1935: President, Dr. Richard N. Sutton; vice-president, Dr. P. M. Chichester; secretary-treasurer, Dr. Alfred M. Palmer. All are of Clarendon, Va.

Accomac Medical Society.

The annual election of officers was held at a regular meeting of the Society in the Drummondtown Tavern, on January 8th, and resulted as follows: President, Dr. J. Fred Edmonds, Accomac; vice-president, Dr. Alva Mathews, Oak Hall; and secretary-treasurer, Dr. John W. Robertson, Onancock, who was re-elected after serving a number of years.

The meeting then adjourned to meet with the Eastern Shore of Virginia Physicians Journal Club. At this meeting, papers were presented by Dr. W. W. Kerns, of Bloxom, on Pneumonia, and Dr. G. W. Holland, of Eastville, on Dislocations.

Eastern Shore of Virginia Physicians Journal Club.

The February meeting of the Club was held on the 12th in the Northampton-Accomac Memorial Hospital at Nassawadox, Va. Dr. William T. Green, of Nassawadox read a paper on Refraction of the Eye, the discussion on this being led by Dr. J. Fred Edmonds, of Accomac. Dr. Joseph H. Hiden, Pungoteague, then presented a paper on Scarlet Fever and the discussion on this was opened by Dr. John Hamilton, of Nassawadox.

The Journal Club is filling a need on the Eastern Shore in cementing the physicians into a closer social and professional contact, the membership being composed of the physicians of both Accomac and Northampton counties. The meetings are well attended and the programs are most interesting and instructive.

JOHN W. ROBERTSON,
Secretary.

The Roanoke Academy of Medicine

Held its second hospital meeting at the Lewis-Gale Hospital, January 21st, at 8:30 P. M.

The following scientific program was presented:

Sarcoma of the Thigh—Case Report—Dr. Paul Davis.

Some Observations on the Relationship between Maxillary Sinusitis and Middle Ear Infections—Dr. G. M. Maxwell.

Hypothyroidism—Dr. B. P. Seward.

Trochobezoar—Report of a Case—Dr. J. T. McKinney.

Brain Injury—Case Report—Dr. M. A. Johnson.

Following the meeting refreshments were served.

On February 4th, the Academy held a dinner meeting at the Elks Club. At this time they had two guest speakers—Dr. T. M. Rivers, of the Rockefeller Institute, New York, who spoke on "Virus Encephalitis," and Dr. Emil Novak, of Johns Hopkins Medical School, Baltimore, whose subject was "Gynecological Aspects of Endocrinology." Besides the visiting speakers, a number of out-of-town guests were present for the dinner and addresses.

Dr. W. P. Jackson and Dr. Frank Helvestine, Jr., are president and secretary, respectively, of the Academy.

Postgraduate Medical Society of Southern Virginia.

The annual meeting of this Society was held on February 26th, at the City Point Inn, Hopewell, with a most interesting program. In addition to papers by Drs. S. E. Gunn, Hopewell, C. E. Martin, North Emporia, and C. T. Jones, Petersburg, there was a symposium on Anterior Poliomyelitis, in which papers were presented by Drs. Mason Romaine, Wilbur M. Bowman, Leta J. White and W. B. McIlwaine, all of Petersburg. The meeting was followed by a subscription dinner at 7:00 P. M.

News Notes

Date Set for Annual Meeting, Medical Society of Virginia.

At the meeting of the Council of the Society on February 11th, the dates for the sixty-sixth annual meeting were set as October 15th, 16th, and 17th, in Norfolk. Dr. William Lett Harris, Bank and Charlotte Streets, that city, has been named by the President of the Norfolk County Medical Society as chairman in charge of arrangements for this meeting.

Educational Material on Cancer Available in Virginia.

Dr. J. Shelton Horsley, Richmond, chairman of the Virginia Section of the American Society for the Control of Cancer, states that this body has for demonstrations to groups of professional or lay persons the following material:

The Canti Cancer Film, one reel, 16 mm. width.

One set of slides on cancer of the breast.

One set of slides on cancer of the uterus.

Two film strips on "Fight Cancer with Knowledge" and "Cancer: Its Life History."

One small projector for showing the two film strips.

The custodian of this material is Dr. Fred J. Wampler, Professor of Preventive Medicine at the

Medical College of Virginia. This material can be obtained by the application of responsible individuals to him, and by payment of postage or transportation both ways.

These slides and films should provide interesting programs for meetings of local societies and we hope many may avail themselves of this offer.

The American Society for the Control of Cancer, 1250 Sixth Avenue, New York, N. Y., has also issued a list of literature which is available to doctors. The State Chairman, Dr. Horsley, will be glad to furnish a list of the books to be secured, upon request to him at 617 West Grace Street, Richmond, Va.

News Notes from Medical College of Virginia.

Dr. Walter L. Bierring, President of the American Medical Association, addressed the students of the college on February 13th.

Several hundred Richmond alumni held a chapter organization meeting February 12th. Officers elected were: Dr. Roshier W. Miller, President; Dr. Henry W. Street, Vice-President; Miss Annie Franks, Secretary, and Mr. J. A. Reese, Treasurer. Committees were appointed and tentative plans made looking toward the Centennial Celebration in 1938.

The regular staff meeting was held February 14th. The program was as follows:

Impressions of a Recent Clinical Trip, by Dr. E. L. Kellum.

Preventive Pedodontia, by Dr. H. T. Knighton.

Preliminary Report: Role of Vitamin A Deficiency in Etiology of Lupus Erythematosa, by Dr. Powell Williams.

Governor George C. Peery has accepted the invitation of the college to make the commencement address.

Outpatient Department figures for the month of January show 5,145 patient visits by 2,414 patients.

Dr. A. H. Fuller, of West Upton, Massachusetts, was a recent visitor to the college. Doctor Fuller had not been back in Richmond since his student days here and was much pleased with the substantial progress the college had made.

Dr. J. B. Jones, '32, now located at Canadensis, Pennsylvania, was also a recent visitor.

A Memorial service in honor of Dr. Rudolf B. Teusler, '98, was held February 10th, at Monumental Episcopal Church of which Doctor Teusler was a member.

Dr. William T. Sanger, President, attended the Annual Congress of the Council on Medical Education and Hospitals, Chicago, February 18th-19th.

News From University of Virginia, Department of Medicine.

On January 21st Dr. J. T. Murphy, of Toledo, and Dr. Plin Morse, of Detroit, spoke before the University Medical Society on the subject of Bone Tumors: their Clinical, Radiological and Pathological Aspects.

On January 23rd Dr. C. C. Speidel addressed the Montreal Neurological Institute on Nerve Injury and Recovery.

At the meeting of the University Medical Society on February 6th, Dr. Thomas Fitz-Hugh, Jr., of the Department of Internal Medicine of the University of Pennsylvania, spoke on Pernicious Leukopenia (agranulocytic angina): Its clinical and experimental background and present status.

Dean J. C. Flippin attended the special meeting of the House of Delegates of the American Medical Association in Chicago on February 15th, and the meetings of the Council on Medical Education and Hospitals on February 18th and 19th.

Jefferson Medical College.

The William W. Root Alpha Omega Alpha Lecture was delivered in the College Building by Professor William K. Gregory, A. M., Ph. D., of Columbia University and The American Museum of Natural History, Friday evening, January 18, 1935, on "The Origin, Rise and Decline of Homo Sapiens."

Married.

Dr. Samuel Gilmore Saunders, class of '33, Medical College of Virginia, formerly of South Hill,

Va., and Miss Kathleen Easley, Clarksville, Va., January 17th. They will make their home in Loudon, Tenn., where Dr. Saunders is now resident physician in charge of the Harrison Memorial Hospital.

Dr. Thomas F. Staley and Mrs. Alta Carr Daniel, both of Bristol, Va.-Tenn., the middle of January. They are spending the winter in Florida.

Dr. Leon R. Staton, Lynchburg, Va., and Miss Nancy W. Terrell, Palmyra, Va., January 12th. Dr. Staton has been interning at the Lynchburg General Hospital.

Dr. Robert Stuart Roberson, Hazelwood, N. C., and Miss Eunice Simons, Colerain, N. C., December 27th. Dr. Roberson is a member of the class of '30, Medical College of Virginia.

Dr. Leo Jacobs, formerly of Richmond, Va., and Miss Esther Bloom, Covington, Ky., February 14th. Dr. Jacobs is a member of the class of '27, Medical College of Virginia, and made his home in Covington, Ky., for several years. He is now specializing in the practice of eye, ear, nose and throat, with offices in Wainwright Building, Norfolk, Va.

The Southwestern Virginia Medical Society

Will hold its regular semi-annual meeting in Christiansburg, Friday, March 22nd, under the presidency of Dr. Beverley F. Eckles, of Galax. The secretary-treasurer. Dr. Harry W. Bachman, of Bristol, Va., announces that the program has not yet been completed. It is safe to say, however, that it will be both interesting and instructive.

Dr. Fred F. Oast,

Roanoke, Va., received an appointment as Medical Officer on the Staff of the Veterans Facility at Roanoke, effective February 4th.

Dr. H. B. Damron,

Class of '32, Medical College of Virginia, was transferred early in February from Fredericksburg, Va., to Beltsville, Md., to assume duties as Medical Supervisor for CCC Sub-district No. 10.

Dr. and Mrs. Damron have been receiving the congratulations of their friends upon the birth on January 12th of a daughter, Phyllis Ellen.

The American College of Surgeons

Will hold a sectional meeting for Virginia, Maryland, Delaware, West Virginia, and the District of Columbia in Washington, D. C., on April 11th and 12th. Headquarters will be at the Mayflower Hotel. The program will include surgical clinics at the various hospitals, hospital conferences and medical motion pictures directed by Dr. Malcolm T. MacEachern, associate director of the College. A scientific session will be held on the evening of the 11th and a public health community meeting on the 12th. There will also be a special session on Eye, Ear, Nose and Throat Surgery. The program includes many distinguished visitors. Dr. Ralph M. LeComte, Washington Medical Building, Washington, D. C., is chairman of the local committee of arrangements.

Dr. Clarence Porter Jones, Newport News, Va., chairman of the Virginia section, emphasizes the fact that a cordial invitation is extended not only the Fellows and hospitals in the various states included but to the entire medical profession. Dr. Joseph D. Collins, Portsmouth, Va., is secretary of the State executive committee.

New Health Officers Appointed.

The State Health Department announces the appointment of the following health officers in various sections of Virginia:

Dr. Willard Cardwell, of Lynchburg, Va., has been appointed health officer of the district composed of Lee, Scott, Wise and Dickenson counties, with headquarters at Norton, Va.

Dr. David Andrew will be health officer of Wythe county with headquarters in Wytheville, Va.

Dr. R. D. Hollowell, with headquarters at Harrisonburg, Va., will be health officer of the district composed of Rockingham, Shenandoah, Warren, Rappahannock, Page, Madison and Greene counties.

Dr. C. H. Dawson has been transferred from Suffolk, Va., to have charge of the health district composed of James City, York, Warwick and Elizabeth City counties. His headquarters will be at Williamsburg, Va.

Dr. D. C. Steelsmith has been appointed in charge of the Halifax and Pittsylvania county district, with headquarters in South Boston. Dr. W. H. Walcott, Chatham, Va., will be assistant health officer to this district.

Richmond Eye, Ear, Nose and Throat Society.

At the annual meeting of this Society held in February, the following officers were elected for the ensuing year: President, Dr. S. M. Cottrell; vice-

president, Dr. T. B. Weatherly; and secretary-treasurer, Dr. R. W. Vaughan. This Society holds monthly meetings.

Dr. William D. Haden,

Charlottesville, Va., was elected a member of the board of directors of the Red Land Club, at the annual meeting held recently.

Dr. Rhodric W. Browne,

Who has continued his membership in the Medical Society of Virginia since he was located in Norfolk, Va., with the U. S. Public Health Service, announces his transfer from Veterans Administration Facility, Bronx, N. Y., to the same service at Dwight, Ill.

Dr. H. S. Hedges,

Charlottesville, Va., was recently named as a member of the board of directors of the Children's Home of that city.

Dr. George E. Waters,

Class of '33, University of Virginia, who later interned at the Baltimore City Hospital, is now on a fellowship at the Johns Hopkins University School of Hygiene and Public Health. He expects later to enter health work.

Dr. Francis I. Bloise,

Until recently at Lorton, Va., is now located in Alexandria, Va., with offices at 203 North Washington Street.

Heads American Red Cross.

President Roosevelt has appointed Dr. Cary T. Grayson, former Virginian, as national chairman of the American Red Cross, succeeding the late John Barton Payne.

Dr. Walter L. Bierring,

President of the American Medical Association, was the guest speaker before the Richmond Academy of Medicine on February 12th. At this time Dr. Bierring displayed a movie, indicating the scope of activities of the American Medical Association, which employs four hundred and fifty persons in the execution of its work for the medical profession.

The Seventh International Congress on Industrial Accidents and Diseases

Will be held at Brussels, Belgium, from July 22 to 27, 1935. The American Committee of the Congress is under the chairmanship of Dr. Fred H. Albee, New York, for the Section on Accidents and that of Dr. Emery R. Hayhurst, Columbus, Ohio, for Industrial Diseases.

The American delegation to the Congress will sail from New York and visit London, Amsterdam, The Hague and Paris and optionally Budapest. Physicians interested in the Congress or in the medical tour in conjunction with it may address the Secretary, Dr. Richard Kovacs, 1100 Park Avenue, New York.

Diagnostic Cancer Clinic.

The Staff of St. Elizabeth's Hospital, Richmond, Va., has opened the St. Elizabeth's Diagnostic Cancer Clinic for the diagnosis of indigent patients suspected of having malignancy. The clinic is held at 613 West Grace Street on Tuesday and Friday of each week, from 1:30 to 2:30 P. M. Patients are received at the clinic upon recommendation of their family physicians.

Dr. Ernest C. Shull,

Herndon, Va., was recently made chairman of the Health Committee of the Fairfax County Federation of Parents and Teachers.

Dr. Frederick W. Shaw,

Professor of Bacteriology and Parasitology at the Medical College of Virginia, Richmond; Dr. F. M. Johns, of Tulane University, New Orleans, and Dr. W. D. Stovall, of Wisconsin University, Madison, form a sub-division of the Research Committee of the American Society of Clinical Pathology for the study of Pathogenic Fungi, several years being given them in which to elaborate their report.

Dr. J. Randolph Perdue,

Class of '32, University of Virginia, Department of Medicine, who served a rotating internship at Jefferson Hospital, Roanoke, Va., and later had eighteen months work in obstetrics and gynecology at Duke University, Durham, N. C., has opened offices in Ingraham Building, Miami, Fla. His practice will be limited to obstetrics and gynecology.

Dr. L. T. Stoneburner,

Richmond, Va., was elected president of the board of directors of the Lewis Ginter Community Building, at its annual meeting held on February 12th.

One Hundred and Fifty Years of Publishing.

On January 25th Lea & Febiger, publishers of Philadelphia, celebrated the completion of one hun-

dred and fifty years of continuous activity. The business was established in 1785, antedating the Constitution of the United States by four years. Since then it has been in continuous operation in the same family, one of the members of the present firm being a great-great-grandson of Mathew Carey, the founder.

In the early days this firm gave its attention to general literature, but later it began specializing in medicine and has continued in this field to the present time. Since 1859 it has been the publisher in America for Gray's Anatomy, the most famous work in all medical literature, and the one which has been term "The Bible of Medicine." It also publishes The American Journal of the Medical Sciences, now in its one hundred and fifteenth year of continuous publication.

A most attractive booklet, giving the history of this firm, has been prepared by them.

The American Neisserian Medical Society

Was founded on June 12, 1934. It is dedicated to the promotion of knowledge in all that relates to the gonococcus and gonococcal infections, that there may be attained improvement in the management of gonorrhea and a reduction in its prevalence. There are 115 charter members and the officers are: Honorary President, Dr. Edward L. Keyes, New York; President, Dr. J. Dellinger Barney, Boston; Vice-Presidents, Dr. P. S. Pelouze, Phialdelphia; Dr. A. L. Clark, Oklahoma City; Dr. Walter Clarke, New York City; Dr. R. D. Herrold, Chicago; Dr. N. A. Nelson, Boston, and Secretary-Treasurer, Dr. Oscar F. Cox, Jr., Boston. These also compose the Executive Committee.

The society plans to carry out the following program:

A. The scrutiny of the management of gonorrhea in both male and female.

B. Clinical and laboratory research in the diagnosis, medical and social pathology, and the treatment of gonorrhea.

C. Dissemination among the medical profession and the public of authoritative information concerning gonorrhea.

Membership is limited to:

A. Residents of the United States or its territories, Canada or Mexico.

B. Graduates of a medical school recognized by the American Medical Association.

C. Those who are engaged in some phase of the management of gonorrhea.

Invitation to membership is extended to all qualified physicians who desire to work for improvement in the management of gonorrhea. Application blanks can be obtained from Oscar F. Cox, Jr., M. D., Secretary, 475 Commonwealth Avenue, Boston, Mass.

Dr. A. M. Showalter,

Christiansburg, Va., was elected one of the grand stewards of the Grand Lodge, Ancient Free and Accepted Masons, of the Commonwealth of Virginia, at the annual communication held in Richmond the middle of February.

Postgraduate Clinic and Stuart McGuire Lectures.

The Postgraduate Clinic of the Medical College of Virginia will be held again this year in conjunction with the Stuart McGuire Lectures. The program has not been completed, but it is being planned around the general idea of physician's part in the prevention of diseases. Contraceptive techniques and appliances will also be discussed and demonstrated.

Dr. William Robert Weisiger,

Richmond, Va., was appointed District Deputy Grand Master of the 15th Masonic District at the 157th Grand Annual Communication of the Grand Lodge of Virginia A. F. and A. M., held recently in Richmond, Va. This compromises the twenty-five Masonic Lodges located in Richmond and vicinity. Dr. Weisiger, who is a Past Master of Dove Lodge No. 51, had the distinction of receiving the unanimous endorsation of the twenty-five Lodges for this appointment and had the honor of receiving his warrant from the hands of the Grand Master himself.

The Tri-State Medical Association of the Carolinas and Virginia.

At the conclusion of the largest meeting in its history, in Charlotte, N. C., February 18th-20th, under the presidency of Dr. Paul V. Anderson, of Richmond, Va., elected the following officers for the ensuing year: President, Dr. C. C. Orr, Asheville, N. C.; vice-presidents, Dr. J. M. Hutcheson, Richmond, Va.; Dr. C. R. May, Bennettsville, S. C.,

and Dr. Frank C. Smith, Charlotte, N. C.; secretary-treasurer, Dr. J. M. Northington (re-elected), Charlotte, N. C. The following councilors were also elected to serve for three years: Dr. W. Lowndes Peple, Richmond, Va.; Dr. J. H. McIntosh, Columbia, S. C., and Dr. T. C. Bost, Charlotte, N. C. It was voted to hold the 1936 meeting in Columbia, S. C.

Endorses Revision of Food and Drugs Act.

Attention was brought to the Council of the Medical Society of Virginia, at its meeting in February, that the Council on Pharmacy and Chemistry and the Committee on Foods of the American Medical Association had adopted statements concerning a revision of the Food and Drugs Act, which had been endorsed by the Board of Trustees of the Association and presented the legislators concerned with a consideration of new legislation on these subjects. This action was due to the fact that in the thirty years since the Federal Food and Drugs Act became a law, there have been notable developments and numerous changes which have made the present law inadequate to meet modern conditions.

The Council of the Medical Society of Virginia adopted a resolution endorsing the action of the American Medical Association.

Doctors Enrolled for Spring Graduate Course.

The following doctors have registered for the Spring Graduate Course to be held in the Gill Memorial Eye, Ear, and Throat Hospital, Ronaoke, Va., April 15th-20th, according to list furnished on February 18th:

Dr. G. Edward Campbell, Johnson City, Tenn.
Dr. E. Vermillion, Welch, W. Va.
Dr. M. R. Gibson, Raleigh, N. C.
Dr. Milton A. Gilmore, Hopkinsville, Ky.
Dr. G. L. Morriss, Kenbridge, Va.
Dr. J. P. Ramsour, Gastonia, N. C.
Dr. Hood, Gastonia, N. C.
Dr. A. M. Walker, Tuscaloosa, Ala.
Dr. C. C. Chase, Middletown, Conn.
Dr. W. D. Gemmill, Monessen, Pa.
Dr. Gilbert L. Dailey, Harrisburg, Pa.
Dr. J. R. McCracken, Waynesville, N. C.
Dr. J. F. Martin, Dunn, N. C.
Dr. F. L. Alloway, Kingsport, Tenn.
Dr. Frank Vierling, Knox, Pa.
Dr. O. H. Bobbitt, Charleston, W. Va.
Dr. L. W. Glatzau, Daytona Beach, Fla.
Dr. P. H. Kilbourne, Dayton, Ohio.
Dr. Meade Edmunds, Petersburg, Va.
Dr. C. H. Henderson, Norton, Va.
Dr. E. C. Bryce, Richmond, Va.
Dr. William Leuders, Jr., Staunton, Va.
Dr. H. C. Hughes, DuBois, Pa.
Dr. W. Hamilton Smith, Hagerstown, Md.
Dr. C. H. McArthur, Rome, Ga.
Dr. C. K. Gabriel, Quincy, Ill.
Dr. D. S. Hagood, Brewton, Ala.
Dr. G. B. Woodward, Wilson, N. C.
Dr. A. D. Erehart, Anderson, Ind.
Dr. N. G. Erehart, Anderson, Ind.
Dr. L. F. Swihart, Elkhart, Ind.
Dr. S. R. Lucas, Florence, S. C.
Dr. M. R. Mobley, Florence, S. C.
Dr. Walter Bristow, Columbia, S. C.
Dr. J. W. Adrain, Lorain, Ohio.
Dr. J. Allen Smith, Macon, Ga.
Dr. C. W. Beals, DuBois, Pa.
Dr. Edward S. Wright, Atlanta, Ga.
Dr. Thomas E. Hughes, Richmond, Va.
Dr. J. R. Vermillion, Princeton, W. Va.
Dr. A. M. Whisnant, Charlotte, N. C.
Dr. T. E. Bradley, Fitzgerald, Ga.
Dr. Herman J. Williams, Cordele, Ga.
Dr. Claude T. Wolfe, Louisville, Ky.
Dr. J. H. Simpson, Louisville, Ky.

"Make Maternity Safe"

Is the key-note of the fifth Mother's Day campaign to improve maternity care which is conducted by the Maternity Center Association. Mrs. Shepard Krech, president of the Association, has sent out a widespread call for the cooperation of churches, women's clubs, civic and educational institutions, offering without charge to supply groups with suggestions for local programs.

Information may be obtained from the Maternity Center Association, 1 East Fifty-Seventh Street, New York, N. Y.

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Obituary Record

Dr. Robert Camden Whitehead,

Prominent diagnostician of Norfolk, Va., died suddenly from a heart attack on January 27th. He was a native of Amherst County, Virginia, and graduated in medicine from the former University College of Medicine, Richmond, in 1905. After this, he practiced for a time at Amherst, before he went to Norfolk a little more than twenty years ago. He had been a member of the Medical Society of Virginia since 1906, was a member of the Norfolk County Medical Society, assistant chief surgeon of the Norfolk-Southern Railway, and a Mason. In addition to his professional work, Dr. Whitehead was a great lover of music and was one of the three organizers of the Norfolk Symphony Orchestra, and much of the success of this organization is due to his unceasing work. He is survived by his wife, two children, and a large family connection.

Dr. Charles Clifton Tucker,

For many years prominent in the professional and civic life of Blackstone, Va., died at a Richmond hospital on January 28th, after an illness of several months. He was nearly sixty years of age and a native of Nottoway County, Virginia. His medical education was received at the former University College of Medicine, Richmond, from which he received his medical diploma in 1903, and he joined the Medical Society of Virginia that year. Dr. Tucker was a Mason and at the time of his death was vice-president of the First National Bank of Blackstone. His wife and a sister survive him.

Dr. John Gibson Davis, Jr.,

Christiansburg, Va., son of Dr. and Mrs. John G. Davis, of Roanoke, Va., died January 28th. He was thirty-five years of age and graduated from the Medical College of Virginia in 1923. He was a member of his local and the State medical societies and a surgeon to the New Altamont Hospital in Christiansburg. Besides his widow, he is survived by his parents, two sisters, and four brothers, Drs. Paul, F. F., A. C., and Hal Davis, of Roanoke.

Dr. Powhatan Stanley Schenck,

For many years director of public welfare and health commissioner of Norfolk, Va., died at his home in that city on January 24th. He was born in Petersburg, Va., seventy-two years ago, and graduated from the College of Physicians and Surgeons, Baltimore, in 1884. He practiced for a time in Petersburg, specializing in diseases of the eye, ear, nose and throat, but soon turned his attention to health work and was health officer of that city before moving to Norfolk, about 1896. He immediately entered upon health work in his adopted home. With the growth of Norfolk and the enlargement of his field of activities, Dr. Schenck's outstanding work gained him national recognition. Although forced to retire from active work about three years ago, on account of ill health, Dr. Schenck was continued on the city's roster as Health Commissioner to the time of his death. He is survived by his wife and four children, one of them being Dr. George W. Schenck, of Norfolk.

Dr. William Fitzhugh Carter,

Major, U. S. Army, retired, whose home was at Crozet, Va., died January 1st, death being due to pneumonia. He was eighty-four years of age and a graduate in medicine from the University of Virginia in 1872. He entered the Army in 1879 and was promoted through the various grades to the rank of major in 1897. He was retired upon his own request in 1909.

Resolutions on Death of Dr. William Tilden Smith.

At a meeting of the Norfolk County Medical Society, the following resolutions were adopted:

WHEREAS, it has pleased Almighty God to release from this life our fellow member and co-worker, William Tilden Smith.

Therefore, be it resolved:

1. That with the passing of Doctor Smith this Society feels its loss.

2. That in his profession he was a tireless worker who was possessed of a kindly and generous spirit that prompted him to serve all those whom he contacted.

3. That he gave freely of his time, strength and means to benefit those who were less fortunate.

4. That this Society herewith conveys its profound sympathy to his wife.

5. That these resolutions be spread upon the minutes of this Society, and that a copy of same be forwarded as a memorial from this Society to his bereaved family.

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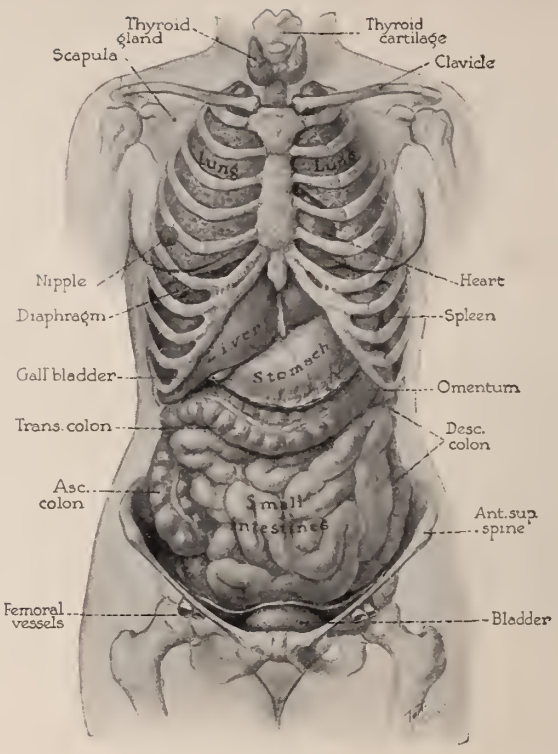
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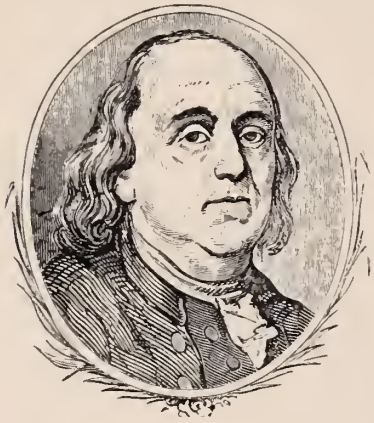
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